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Chicago's O'Hare Runway Configuration Management System (RCMS) Volume II - Users Guide

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July 1987

Users Guide

U.S. Department of Transportation
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16. Abstract

Volume I of this report describes the proposed Runway Configuration Management System (RCMS) operational software for review by the facility personnel. It also serves as an input to RCMS functional specifications for the Traffic Management System (TMS) program. Using interactive computer logic, RCMS helps supervisors select runway configurations which reduce aircraft delays by optimizing throughput capacity in dynamic operational environments. Volume II of this report is the "User's Guide" to the RCMS.

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1. INTRODUCTION.

1.1 WHAT IS RCMS?

The O'Hare Runway Configuration Management System (RCMS) is an interactive computer program designed for use at O'Hare International Airport. For further background and a functional description of RCMS, see Volume I, "Description of the Operational Software."

It aids air traffic control in two ways:

a. RCMS acts as a communications system among the assistant traffic management (AT), the Airway Facilities operations officer (AF), and the team supervisor of the tower cab (CAB); it will thereby centralize information relevant to runway configuration selection.

b. RCMS evaluates the eligibility of configurations and serves as a planning aid for the AT for runway configuration selection.

1.2 OVERVIEW OF RCMS.

RCMS maintains all the data essential to describe the O'Hare Airport runway and equipment conditions over a facility day. RCMS displays pertinent portions of this data to AT, CAB, and AF. Each user has a separate set of display screens and functions tailored to his needs. RCMS processes the user supplied information and provides the appropriate portions to the other users via their own set of displays.

Each user communicates with RCMS through a CRT display screen and a standard typewriter keyboard with special program function (PF) keys (see figure 1). Most of the information is presented on the screen in the form of tables. The user selects the desired screen by pressing the appropriate PF keys. Some displays serve as planning logs and can be used to communicate among the AT, CAB, and AF. Other displays provide RCMS with values used to trigger the generation of advisory messages. Any users may display the recommended configurations at any time, although only AT may change the configuration being used.

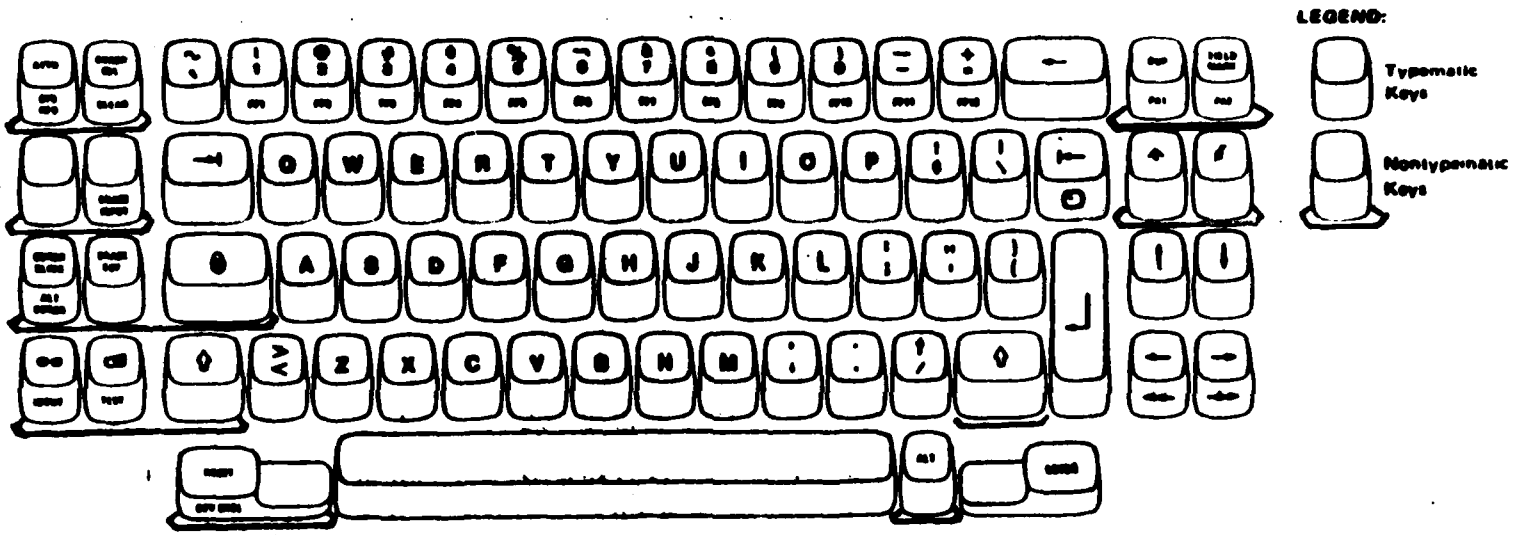
1.3 ORGANIZATION OF THE USER'S GUIDE.

This guide is organized by computer terminal operation, software execution modes, and external inputs to the RCMS.

The first section of the guide describes the terminal keyboard operation which controls the display screens (panels) presented by the RCMS. Common screen functions permit the users to communicate with the application software of the RCMS.

The second section outlines the RCMS panel execution for the current, planning, and forecast modes. It describes each screen, the user's interaction for the screen, and the screen input for each user (AT, CAB, and AF). The user's guide provides a sample of each panel and a detailed description of its contents.

Peripheral users interfacing with RCMS, such as the 3270 PC and the City of Chicago, are described later in this manual.



Typewriter Keyboard

Note: To select a function key, simultanously press the ALT key and the desired function key.
Eg, PF-1 through PF-12 keys, and PA2 keys.

The ENTER key enables the user to scroll through messages.

FIGURE 1. RCMS KEYBOARD

2. DISPLAY SCREENS.

2.1 INTRODUCTION.

There are two types of display screens provided by the RCMS. A master auto screen is periodically updated by the software and has no provisions for manual data entry. The fixed panel displays comprise the remaining screens, some of which can be accessed for data entry.

A user communicates with RCMS through the set of fixed screens employing specific formats. Each screen presents some information about conditions at O'Hare Airport, usually in the form of a table or message. Some of the information on the fixed screen can be provided by the user and other information is calculated by RCMS (e.g., the arrival runway minimums). Each screen has two functions:

a. A screen displays information on conditions at O'Hare Airport.

b. A screen may be used to enter or change information about conditions at the airport.

RCMS provides a menu of selectable screens and functions on lines 22 and 23 of panel. The menu indicates which program function (PF) key to use for each selection. To select the PF-8 equipment panel, a user presses the ALT key and PF-8 key simultaneously.

2.2 WHAT'S IN EVERY PANEL?

All RCMS display screens (including the master auto panel) have the following common features.

a. Menu of Program Function (PF) Keys. Each screen has a menu designed to make panel selection consistent. To select a panel, the user hits the ALT key and the desired PF key simultaneously. The function of the key depends on the nature of the panel and the mode of operation. For example, PF-8 selects the equipment panel which is in the current mode. In the planning mode, PF-8 provides the equipment planning log. In the forecast mode, PF-8 selects the forecast planning log.

b. Message Line. RCMS uses the 24th line of each screen to report additional information. There are three basic types of messages:

1. Alerts, Advisories, and Ordinary Messages. These messages concern the operation at the airport and the status of the current and/or planned configurations. Only specific screens carry this type of message (for example, the master auto panel).

2. Protocol Messages. The current, planning, and forecast modes of operation have their own protocol messages which are explained in the RCMS software description. These messages provide the processing status for data or plans entered by the user.

3. Error messages. These messages usually refer to illegal user entries, but they may also be used to report special conditions such as questions regarding the users' intentions.

2.2.1 Field Intensity.

Portions of a display screen can appear at any of three different lighting intensities. The three intensities are high, normal, and dark. The message line appears at high intensity when there is an alert or advisory message on the master auto screen.

2.2.2 Computer System Status Line.

Line 25 is reserved for the IBM 4321 computer system status. It contains the status of the host computer's activity or the condition of the display relative to the host. (For example, a clock symbol indicates that the computer is processing a user entry.)

The fixed display panels have the following additional features:

a. Title and Access Time. The first line contains the title of each screen and the GMT time the user selected the panel.

b. Text Fields. They are words and symbols which are permanently part of the display (e.g., the title of a screen).

c. Data Fields. They are the portions of the display which can be changed either by the user or by RCMS (e.g., equipment status entries).

d. Protected and Unprotected Fields. Most of each display screen is protected against inadvertent entries. This means that the user cannot type in these areas of the screen; i.e., the user cannot change or accidentally overwrite an area used for display only. For example, all text fields are protected. Only a few required areas of any display are unprotected. The user may enter data only in these unprotected areas.

e. Cursor. The cursor is an underscore (_) symbol that appears on every screen; it indicates the position at which a typed entry will appear.

3. PRINCIPLES FOR USING RCMS.

3.1 ACCESSING AND EXITING RCMS.

Before using RCMS, the user must access the computer system housing CMS by turning on the console, waiting for a logo to appear on the screen, and hitting the ENTER key. Then RCMS can be activated by entering the user's LOGON command as follows:

	User	Password
LOGON	AT	AT
LOGON	AF	AF
LOGON	CAB	CAB
LOGON	CITY	CITY
LOGON	PCUSER	PCUSER

After the appropriate command is typed and entered, RCMS internally initializes all of the user's screens to reflect the most recent data available on O'Hare. When this initialization is complete, RCMS displays the user's master screen.

A typical RCMS session consists of activating RCMS, accessing a series of screens, interacting with individual screens as required, and returning to the master auto screen.

3.2 DATA ENTRY.

The user begins the RCMS session by choosing a screen from among those listed on the menu by pressing the ALT key and the desired PF key simultaneously. Immediately, the host computer system produces the symbol for the computer system status at the bottom of the screen. Then the screen darkens momentarily and the requested display appears. The cursor is located in the first (or, in some cases, the second) unprotected field on that screen. If there are no unprotected fields, the cursor is located in the upper left-hand corner of the screen. The message line contains "SCREEN UPDATED BY" and the GMT time of the last screen update. The user may now move the cursor to an unprotected location on the screen and use the typewriter keyboard to make changes.

3.2.1 Positioning the Cursor.

Upon examination of the keyboard, the user will discover seven keys marked with arrows (see figure 1). Their functions and associated symbols are described below:

a. New Line Key (↵). This key moves the cursor to the first unprotected field in the next line containing an unprotected field.

b. Tab Key (→|). This key moves the cursor to the next unprotected field.

c. Backtab Key (|←). This key moves the cursor back to the first unprotected position in the field where the cursor is located. If that field is protected, or if the cursor is at the beginning of the field, then this key moves the cursor to the previous unprotected field.

d. Horizontal and Vertical Positioning Keys (←,→,↑,↓). These keys move the cursor one character position at a time in the indicated direction.

The user should note that the new line key, tab key, and backtab key move the cursor through the unprotected fields; therefore, they provide the most efficient means for entering data.

3.2.2 Now That The Cursor Is Positioned.

If the user positioned the cursor in a protected area of the screen, any attempts to type will lock the keyboard; i.e., the input inhibited symbol appears. To recover, the user must press the RESET key, which is usually located on the lower left-hand side of the typewriter keyboard. Pressing the RESET key unlocks the keyboard and removes the input inhibited symbol. The user must now reposition the cursor in an unprotected field. This is most easily done with the new line key, tab key, or backtab key.

Once the cursor is positioned in an unprotected field, the user may type the new information onto the screen. This process may be repeated for all entries that require changes.

When all changes are complete, the user must press the PF-12 key (ALT and PF-12 keys simultaneously) to enter these changes into RCMS. If data is not entered through the PF-12 key, RCMS ignores all changes made to the screen.

3.2.3 Now that the Data Is Entered.

Entering data through the PF-12 key allows RCMS to check the validity of all of the new entries and to report any questionable items to the user. RCMS must check all entries in order to maintain a consistent and sensible data base describing the airport.

For example, the ceiling entry must be a non-negative number, but a typographical error may have placed a letter in that field. Entering data through the PF-12 key initiates the error checking routines within RCMS. In this case, the message displays "INPUT MUST BE 0,1,2,3,4,5,6,7,8,9,>3500" -- the cursor is positioned in the field for the ceiling entry, and the ceiling entry is displayed at high intensity.

In general, all errors detected by RCMS result in three actions:

a. An error message appears on the message line.

b. The cursor is positioned in the data field containing the error.

c. The data field containing the error is displayed at high intensity.

If RCMS does not detect any errors among the entries on the screen, the message "SCREEN UPDATED BY" and the GMT update time appear in the message line to indicate the new entries were accepted by RCMS.

3.2.4 If RCMS Detects An Error.

RCMS notifies the user of the required corrective action by a brief explanation on the message line. The user should readily be able to detect the problem encountered by RCMS. With the cursor already in position, the user can simply type in the correction.

Data must be entered with the PF-12 key to allow RCMS to examine the screen for other errors. This process must be repeated whenever corrections are required. After the message "SCREEN UPDATED BY" appears on the screen, RCMS transmits the new information to the master data base, thereby making it available to the other users.

3.2.5 Hardcopy Function.

The user may obtain a hardcopy of the screen being viewed by pressing the PA2 key (ALT and PA2). This output is directed to the printer assigned to the terminal in use. All the fixed panels shown in this guide are samples of the output of the hardcopy function.

3.2.6 Screen Recovery Feature.

Before transmitting the contents of a screen to the master data base, the user may return the screen to its original contents by pressing the PF-11 key (ALT and PF-11). Thus, if the screen has been incorrectly changed, the user may return that screen to its initial state. There is also a special feature associated with the planning screens; when a plan is rejected, PF-11 displays the rejected plan.

3.3 SCROLL FUNCTION.

The user may scroll through the lists of messages on various screens by pressing the keyboard ENTER key. This function is explained for each screen in the following sections.

3.4 PROGRAM RECOVERY FEATURE.

During the execution of the RCMS software program, a user may exit the program or inadvertently cause the software to stop. If this occurs, the program can be restarted by issuing the following commands, depending upon the status of the computer system shown on line 25 of the display.

a. If the computer displays VM READ, type "RESTART" or press the ALT and PF-11 keys simultaneously. If the computer displays CP READ, type "IPL CMS" or press the ALT and PF-12 keys simultaneously.

b. The RCMS software resumes by reading the master data base and returning to the user's master screen when the ENTER key is struck.

4. CURRENT MODE OF OPERATION.

4.1 DESCRIPTION OF THE CURRENT MODE.

The current mode is the normal mode of operation. Typically, it involves viewing the master auto panel -- a full screen of data which is automatically updated every 2 minutes or whenever a significant event occurs. The user remains in the current mode when selecting a current panel with the PF key. When a static screen is viewed, no update occurs until the user hits a PF key again -- either the same key or another key. Data entered through a current panel are checked for format errors. If it contains no errors, the data are resolved with current data in the master data base.

4.2 DISPLAY SCREENS.

The current mode display screens are:

a. Master Auto Panel

b. Master Panel (STATIC)

c. Eligible Current Configuration Panel

d. Eligible Planning Configuration Panel

e. Ineligible Current/Planning Configuration Panel

f. User Message Panel

g. Demand Panel

h. Weather Panel

i. Runway Conditions Panel

j. Equipment Panel

k. Trigger Value Panel

l. Planning/Forecast Selection Panel

The following descriptions for each screen includes its usage, user interaction, specific user functions, RCMS response, user training, and sample results.

4.2.1 Master Auto Panel (PF-1).

The master auto panel (figure 2) displays the current configuration and time of day. If the current configuration is eligible, the total capacity, arrival capacity, and the departure capacity are shown on the screen. The next planned configuration and its scheduled time appear below the current configuration. Appendix A contains a detailed description of this panel.

Usage.

The user has no direct input to this screen. The operation of the panel is dynamic and is automatically updated by the background program. In addition, the PC user provides current wind and ceilometer readings from sensor data directly to the display. Other data is refreshed whenever the master data base is changed by a user or by the background program every quarter-hour.

The processing of the message line data on this display is an integral part of the screen's operation. The user can scroll through the messages on the message line by pressing the ENTER key. This permits the user to step through the advisory messages and the ordinary messages which are stacked for review. An alert message is forced on the display; it remains until the conflict is resolved or until it is replaced with another alert message. Any screen on the PF key menu may be selected.

Specific User Functions.

AT: Has full access to this panel. AT receives all AT selected trigger advisories, alerts, common advisories, and ordinary messages.

CAB: Has full access to this panel. CAB receives all CAB selected trigger advisories, alerts, common advisories, and ordinary messages.

AF: Has no access to this panel.

RCMS Response.

The master auto panel is a reaction display since there are no inputs; it serves as an output of the RCMS software. RCMS monitors the eligibility of current and planned configurations as well as any changes in equipment status. If a conflict or a significant change occurs, the master auto screen displays an alert message and highlights related areas on the screen. For example, if the current configuration becomes ineligible, the screen highlights the alert message and the word "CURRENT" which is next to the description of the ineligible configuration.

User Training (While RCMS is Non-Operational).

View this screen over a period of time to become familiar with the routine changes. Make changes to other panels to cause reactions on the master auto panel. In normal usage, the changes in the master data base will be caused by the other users and the external interfaces.

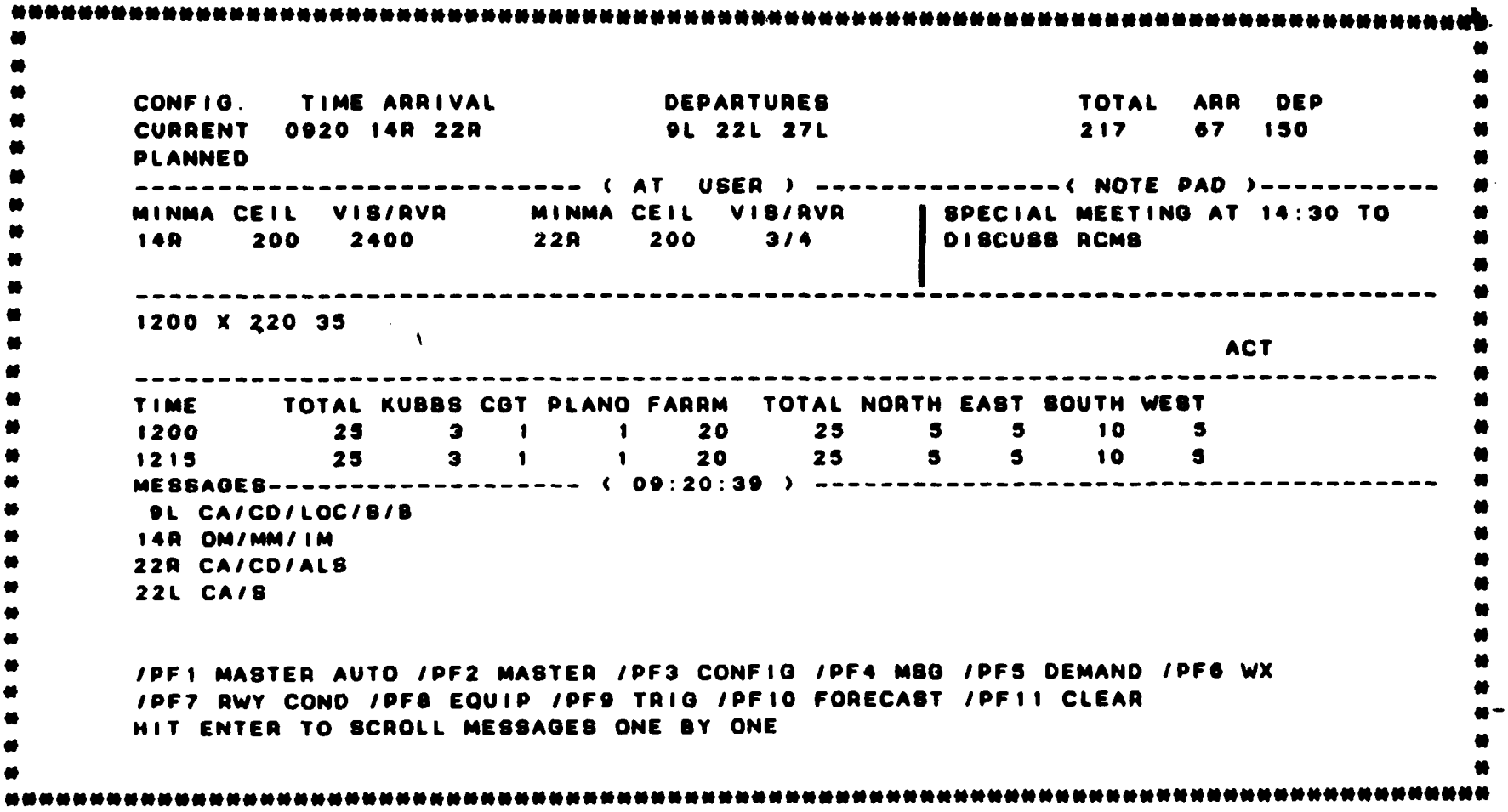


FIGURE 2. PF-1 MASTER AUTO PANEL

4.2.2 Master Panel (Static) (PF-2).

The master panel (figure 3) presents most of the contents of the master auto panel on a static display. Runway composite messages are shown for all 12 runways. No alerts, advisory or ordinary messages are presented on this display. Detailed information on this panel is described in appendix A.

Usage.

The user may input free-form comments in the NOTE PAD area of this display. After data is entered, the master panel and the master auto panel are updated.

The user scrolls through the runway composite messages by pressing the ENTER key. There are a maximum of 12 messages - one for each runway for which a message was generated. Normally four lines are scrolled at a time. After the user views the last of the messages, the initial messages are redisplayed.

The user may step through the composite messages at a different pace by inserting a scroll number less than four. One may also select any other listed in PF key menu.

Specific User Functions.

AT: Has full access to this panel. The NOTE PAD function is shared with all other users.

CAB: Same as AT.

AF: Same as AT. This is the base panel for the AF user. After the LOGON command is issued, this panel appears to the user. The master auto panel is not accessible to the AF user.

RCMS Response.

The RCMS software accepts the NOTE PAD entries and inserts them into the master data base for distribution to the other users.

User Training (While RCMS is Non-Operational).

Insert a note in the NOTE PAD area and enter the data through the PF-12 key. After receiving a screen update message, select the master auto panel (PF-1) to view the NOTE PAD message.

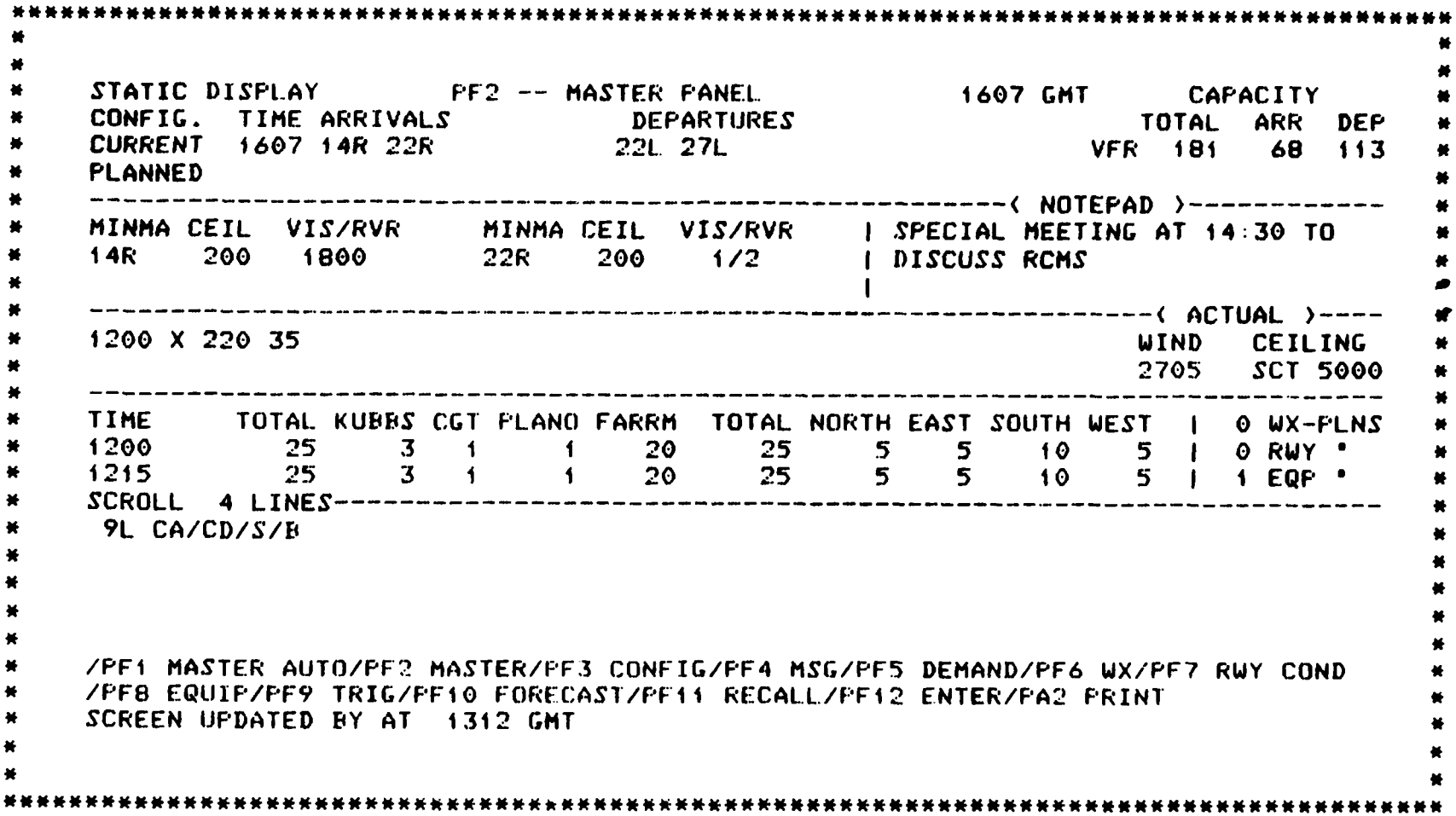


FIGURE 3. PF-2 MASTER PANEL

4.2.3 Eligible Current Configuration Panel (PF-3).

The eligible current configuration panel (figure 4) displays and highlights the selected configuration for the current quarter-hour, and lists all the configurations which are eligible for at least one hour. Arrival and departure capacities are for each configuration. If the selected configuration is ineligible, blanks are inserted for the arrival and departure capacities and for the configuration SELECT number.

The list of eligible configurations is constructed to meet the hourly demand, within ten aircraft, and highlighted to attract the user's attention to recommended configurations. The entire configuration is highlighted if it is consistent with the current configuration. A scroll function allows the user to step through the list of configurations.

The contents of this screen are described in appendix A. The screen shows the GMT time that the panel was accessed and the time slot of the quarter-hour being displayed.

The panel also provides a list of runway remarks for that particular quarter-hour and a legend to interpret the remarks. For example, the remark "EN" indicates that some navigation equipment (E-NAV) is out-of-service or planned out-of-service for that runway.

Near the bottom of the screen is the time of the next planned weather change if it is to occur within an hour. Planned weather may influence the eligibility of a configuration.

The menu of function keys permits the user to select other screens, such as the ineligible configurations for that quarter-hour or eligible configurations for the next quarter-hour.

Usage.

The user may select a new configuration for the airport and the reason for the change. They apply to the screen's quarter-hour time slot and continue to the end of the day. Certain criteria is applied to this process, namely:

a. The new selection must be eligible for that quarter-hour.

b. The new selection only replaces the old selection; it does not replace a planned configuration change.

c. The user may insert a reason for the change and place it in the master data base.

The user can scroll through the list of eligible configurations by hitting the ENTER key. After the last of the configurations is displayed, the scroll function returns to the top of the list. The user may insert a scroll number less than 15 to step through the eligible configurations at a different pace.

The user may also view the ineligible configurations for that quarter-hour or advance to the eligible configurations for the next quarter-hour (up to five quarter-hours). Any screen in the PF key menu may be selected.

Specific User Functions.

AT: Has full access to this panel. Only AT can select new configurations.

CAB: Has limited access to this panel. CAB cannot select configurations.

AF: Same as CAB.

RCMS Response.

After the user enters a new configuration selection through the PF-12 key, RCMS checks the configuration's eligibility. If it is eligible for at least one hour, the screen is updated and the user is allowed to select another function key. If the configuration is ineligible, RCMS inserts an appropriate message on the message line.

User Training (While RCMS is Non-Operational).

Insert a new configuration number to change configurations and enter the data through the PF-12 key. After receiving a screen update message, look for the new current configuration on the PF-1 master auto panel.

```
PF3 -- ELIGIBLE CURRENT CONFIGURATION PANEL                    1608 GMT
CURRENT TIME SLOT      SELECT CNFG 29                  TIME SLOT 1600 TO 1615 GMT
SCROLL  15 LINES       REASON  NOISE   RWY MAINT   STAFFING   DEMAND   OTHER
CNFG ARRIVALS          DEPARTURES  VFR  ARR  DEP     RUNWAY REMARKS
SEL.   14R 22R         22L 27L             68  113     4R
 5      4R  9R         32R 32L             70  112     4L
 6      4R  9R          4L 32R             70   58     9R
 7      4R  9R          4L 32R 32L         70  114     9L CA/CD/S/B
16      9R 14L          4R  4L             70   88    14R
19      9R 14R          4R  4L             71  112    14L
23      9R 14R 14L      4R  4L            104   89    22R
25     14R 14L          4L  9R             70   89    22L
27      9R 14R          4L 22L             72  112    27R
28      9R 14R 14L      4L 22L            106   89    27L
29     14R 22R         22L 27L             68  113    32R
39      9R 14R 14L      9R 22L            106   84    32L
41     14R 14L         22L 27L             70  112    W=WIND/M=MIDWAY/D=DAY ONLY
46     14R 14L          9R 22L             70  112    EN=E-NAV/EL=E-LGT/ER=E-RVR
49     14R 22R 27L     22L 27L            106   76    CA=CLOSED ARR/CD=CLSED DEP
50     22R 27L         22L 27R             70   72    S=SURFACE/B=BRAKING-------
51     22R 27L         27R 27L             72   36    PLANNED WX CHANGE      GMT
/PF1 MASTER AUTO/PF2 MASTER/PF3 ADVANCE/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND
/PF8 EQUIP/PF9 INELIG/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
CNFG SELECTED BY AT 1043 GMT
```

FIGURE 4. PF-3 ELIGIBLE CURRENT CONFIGURATION PANEL

4.2.4 Eligible Planning Configuration Panel (PF-3 Repeated).

The eligible planning configuration panel (figure 5) is similar to the eligible current configuration panel with one exception. The menu of function keys is different; it provides the ability to return to the current configuration panel (PF-4) or advance to the next quarter-hour (PF-3).

Usage.

The user may input a new planned configuration and the reason for the change. The selection criteria of the eligible current configurations applies to the eligible planning configurations. If a planned configuration change is accepted, RCMS generates an advisory message a preset time before the change is scheduled to occur.

The user interaction on this panel is similar to the operation of the current panel with the exception of the menu selections. The user may return to the current quarter-hour instead of advancing through the quarter-hours.

Specific User Functions.

AT: Has full access to this panel. Only AT can select new planned configurations.

CAB: Has limited access to this panel. CAB cannot select configurations.

AF: Same as CAB.

RCMS Response.

RCMS responds to planned configuration changes just as it does for current configuration changes; it records the reason for the change and generates an advisory message a preset time before the planned configuration change.

User Training (While RCMS is Non-Operational).

Insert a new configuration number and enter this data through the PF-12 key. After receiving a screen update message, check the new planned configuration on the PF-1 master auto panel. Note the change and the reason for the change; monitor the advisory messages for the expected triggered advisory.

```
*****************************************************************************************
*                                                                                       *
*                                                                                       *
*              PF3 -- ELIGIBLE PLANNING CONFIGURATION PANEL                  1608 GMT   *
*    PLAN TIME SLOT #2       SELECT CNFG 29                  TIME SLOT 1630 TO 1645 GMT *
*    SCROLL  15 LINES        REASON  NOISE   RWY MAINT   STAFFING   DEMAND   OTHER X   *
*    CNFG ARRIVALS           DEPARTURES  VFR  ARR  DEP     RUNWAY REMARKS              *
*    SEL.  14R 22R           22L 27L           68  113     4R                          *
*     5     4R  9R           32R 32L           70  112     4L                          *
*     6     4R  9R            4L 32R           70   58     9R                          *
*     7     4R  9R            4L 32R 32L       70  114     9L CA/CD/S/B                *
*    16     9R 14L            4R  4L           70   88    14R                          *
*    19     9R 14R            4R  4L           71  112    14L                          *
*    23     9R 14R 14L        4R  4L          104   89    22R                          *
*    25    14R 14L            4L  9R           70   89    22L                          *
*    27     9R 14R            4L 22L           72  112    27R                          *
*    28     9R 14R 14L        4L 22L          106   89    27L                          *
*    29    14R 22R           22L 27L           68  113    32R                          *
*    39     9R 14R 14L        9R 22L          106   84    32L                          *
*    41    14R 14L           22L 27L           70  112    W=WIND/M=MIDWAY/D=DAY ONLY   *
*    46    14R 14L            9R 22L           70  112    EN=E-NAV/EL=E-LGT/ER=E-RVR   *
*    49    14R 22R 27L       22L 27L          106   76    CA=CLOSED ARR/CD=CLSED DEP   *
*    50    22R 27L           22L 27R           70   72    S=SURFACE/B=BRAKING-------   *
*    51    22R 27L           27R 27L           72   36    PLANNED WX CHANGE      GMT   *
*    /PF1 MASTER AUTO/PF2 MASTER/PF3 ADVANCE/PF4 RETURN TO ELIGIBLE CURRENT CONFIG      *
*    /PF9 INELIG/PF11 RECALL /PF12 ENTER/PA2 PRINT                                      *
*    CNFG SELECTED BY AT 1043 GMT                                                       *
*                                                                                       *
*                                                                                       *
*****************************************************************************************
```

FIGURE 5. PF-3 (REPEATED) ELIGIBLE PLANNING CONFIGURATION PANEL FOR NEXT QUARTER-HOUR

4.2.5 Ineligible Current/Planning Configuration Panel (PF-9).

The ineligible current/planning configuration panels are shown in figures 6 and 7. Both list the ineligible configurations for the current and future quarter-hours; they complement the list of eligible configurations and give the reasons for the ineligibility. Reasons for ineligibility include: WX (weather), IFR WX (IFR weather), C (runway closure), and SB (surface and braking). The contents of both panels are described in appendix A.

Both panels are the same with the exception of the menu and the title. The planning screen provides the ability to return to the current quarter-hour (PF-4) or advance to the next quarter-hour (PF-9).

Usage.

The user can view the panel to determine why a particular configuration is not eligible. There are no user inputs to the panels.

The user can scroll through the list of ineligible configurations by hitting the ENTER key. After the last of the configurations is displayed, the scroll function returns to the top of the list. The user may insert a number less than 15 to step through the configurations at a different pace.

Specific User Functions.

AT: Has full access to this panel.

CAB: Same as AT

AF: Same as AT

RCMS Response.

This panel displays the reasons for the configuration ineligibility which were determined by the background program. For example, a configuration would be ineligible if one of its arrival runways were closed.

User Training (While RCMS is Non-Operational).

Examine a particular ineligible configuration, runway-by-runway, to determine the exact cause of the ineligibility. Explore other screens to isolate the cause.

Explore the reasons for ineligibility and check for compliance with the established logic for rejecting a configuration. Then go through the same process for other ineligible configurations.

```
PF9  -- INELIGIBLE CURRENT  CONFIGURATION PANEL      1611 GMT
CURRENT TIME SLOT                                TIME SLOT 1600 TO 1615 GMT
SCROLL  16 LINES
          ARRIVALS              DEPARTURES          REASONS
 1        4R  9R                4L  9L 32R           C
 2        4R  9R                4L  9L 32R 32L       C
 3        4R  9R  9L            4L 32R               C
 4        4R  9R  9L            4L  9L 32R           C
 8        4R  9R                4L  9L               C
 9        4R  9L                4L  9R               C
10        4R  9L                4L  9R 32R           C
11        4R  9R  9L           32R 32L               C
12        4R  9R  9L            4L  9R               C
13        4R  9R  9L            4L 32L               C
14        9R  9L               32R 32L               C
15        9R 14L                9R  9L               C
17        9R 14L                9L 22L               C
18        9R 14L                4L  9L 22L           C
20        9R 14R                4L  9L               C
21        9R 14R                4L  9L 22L           C
22        9R 14R 14L            4L  9L               C
/PF3 CONFIG/PF9 ADVANCE/NO RECALL/NO ENTER/PA2 PRINT
```

FIGURE 6. PF-9 (SELECTED FROM PF-3) INELIGIBLE CURRENT CONFIGURATION PANEL

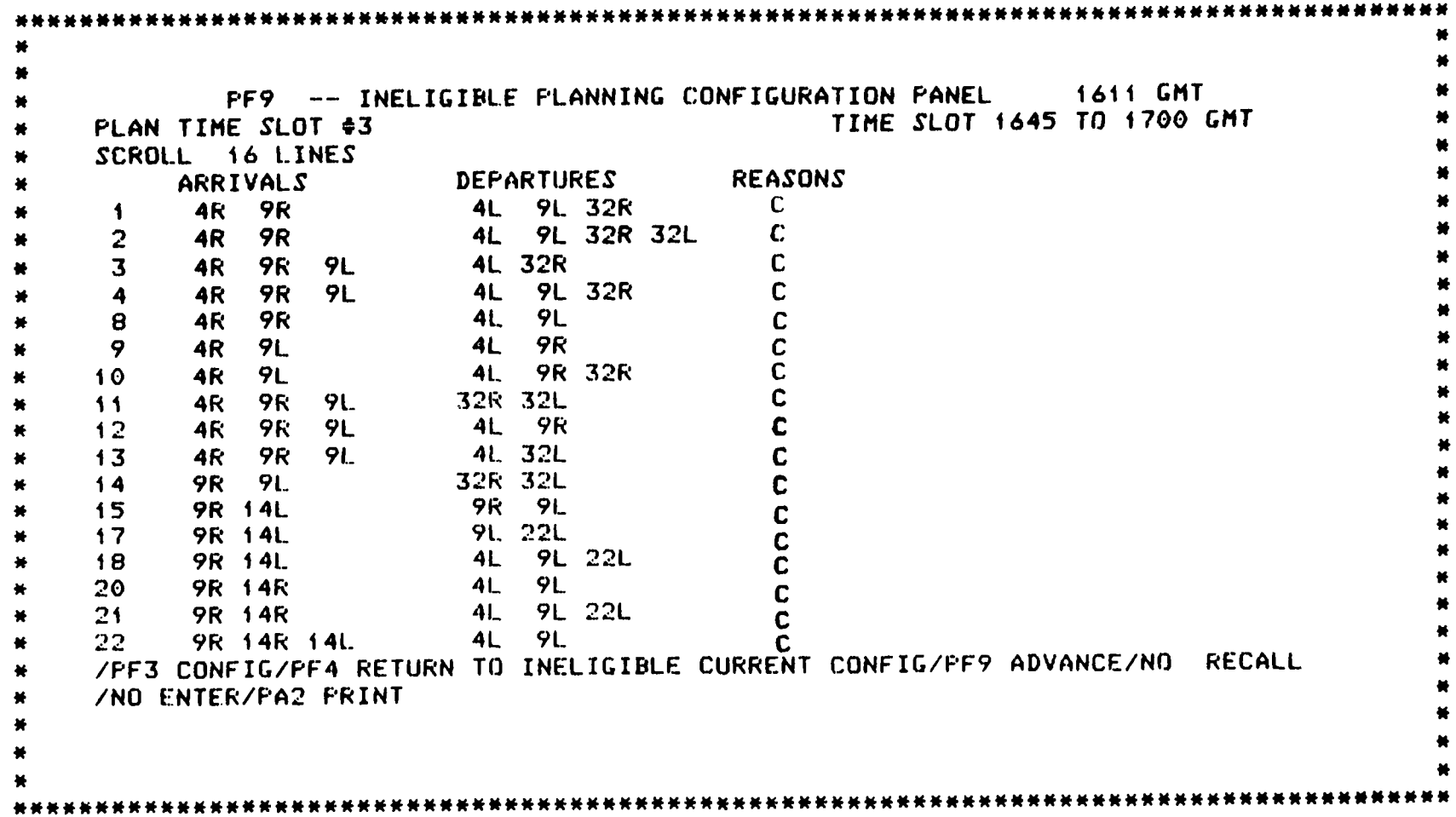


FIGURE 7. PF-9 (REPEATED FROM PF-9) INELIGIBLE PLANNING CONFIGURATION PANEL FOR NEXT QUARTER-HOUR

4.2.6 User Message Panel (PF-4).

The user message panel (figure 8) contains two sets of messages generated by the background program. The first set consists of the recent alerts and advisory messages which are displayed in time order. Current equipment and runway messages comprise the second set. They are ordered by runway and they represent current and planned outages of existing runway conditions. Because the messages are stacked and regenerated each time the background program is executed, the conditions which generated the conditions may no longer exist. The information on this panel is described in appendix A.

Usage.

This panel has no user inputs.

The user can scroll through the messages by pressing the ENTER key. Both sets of messages are scrolled and returned to the original sets after all messages have been displayed. The user may insert a scroll number less than 8 to step through the messages at a different pace. One may also select any screen listed on the PF key menu.

Specific User Functions:

AT: Has full access to this panel. The triggered advisory messages for the AT user are displayed on this panel. The alerts and the current equipment and runway messages are the same for all users.

CAB: Same as AT. CAB gets the CAB advisories.

AF: Same as AT. AF gets the AT advisories.

RCMS Response.

The user message panel serves as an information screen. There is storage for 20 alert and advisory messages and for 60 current equipment and runway messages.

User Training (While RCMS is Non-Operational).

View the screen periodically during a training session. If selected current or planned configuration become ineligible, the appropriate messages will appear each time the background program processes the master data base.

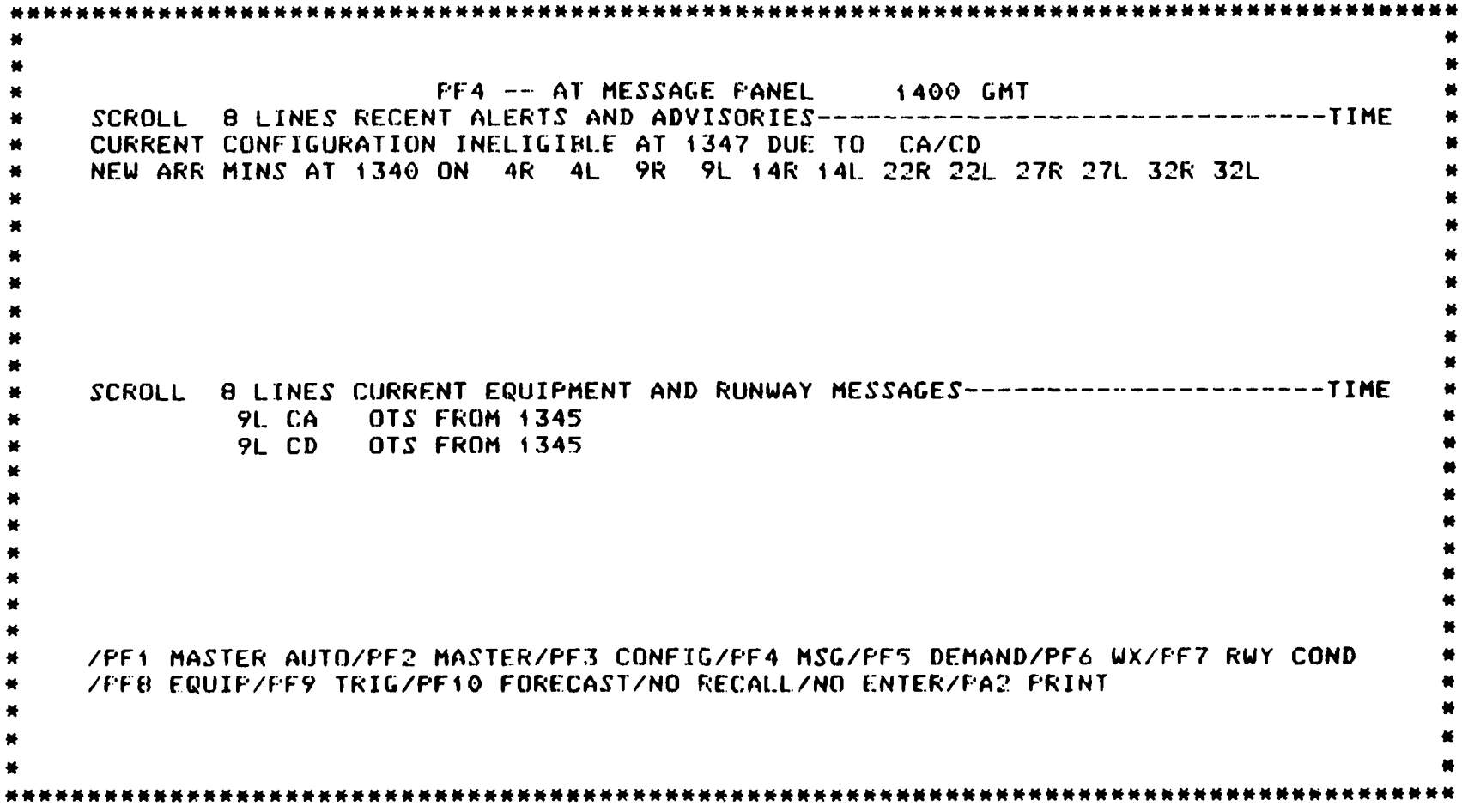


FIGURE 8. PF-4 USER MESSAGE PANEL

4.2.7 Demand Panel (PF-5).

The demand panel (figure 9) displays the next six hours demand information received from the Central Flow Control Facility as follows: eight quarter-hours of demand, their hourly totals, and the next four hours of demand. Detailed information on this panel is described in appendix A.

Usage.

This panel has no user input and no user interaction.

Specific User Functions.

AT: Has full access to this panel.

CAB: Same as AT.

AF: Same as AT.

RCMS Response.

The user message panel is an information screen. It is updated every quarter-hour and whenever new demand data are received from the Central Flow Control Facility.

User Training (While RCMS is Non-Operational).

View the panel periodically to monitor any changes, especially those at the quarter-hour.

PF5 -- DEMAND PANEL 1200 GMT

TIME	ARRIVALS TOTAL	X/Y/Z X= KUBBS	TOTAL Y=HEAVY CGT	Z= LIGHT PLANO	FARMM	DEPARTURES TOTAL	N	E	S	W
1200	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1215	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1230	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1245	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1200 1300	100	12/4/4	4/ /4	4	80/40/40	100	20	20	40	20
1300	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1315	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1330	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1345	25	3/1/1	1/ /1	1	20/10/10	25	5	5	10	5
1300 1400	100	12/4/4	4/ /4	4	80/40/40	100	20	20	40	20
1400	100	12/4/4	4/ /4	4	80/40/40	100	20	20	40	20
1500	100	12/4/4	4/ /4	4	80/40/40	100	20	20	40	20
1600	100	12/4/4	4/ /4	4	80/40/40	100	20	20	40	20
1700	100	12/4/4	4/ /4	4	80/40/40	100	20	20	40	20

/PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND
/PF8 EQUIP/PF9 TRIG/PF10 FORECAST/NO RECALL/NO ENTER/PA2 PRINT
SCREEN UPDATED BY CF 1200 GMT

FIGURE 9. PF-5 DEMAND PANEL

4.2.8 Weather Panel (PF-6).

The weather panel (figure 10) displays the automated current and forecast weather from the National Weather Service (NWS), allows the CAB user to manually input CAB visibility and CAB ceiling, and displays various weather sensor data. It also allows access to the local area weather supplied by the NWS. Detailed information on this panel is described in appendix A.

The National Weather Service interfaces with RCMS through the Control Weather Service Unit to provide the latest information on all automated weather -- current weather, forecast weather, and local area weather specified by the user. The data is placed in the master data base for reference by the users.

Both the CAB visibility and CAB ceiling have distinct input formats. The other weather information on the screen is obtained from either sensor data or the master data base.

This panel allows the user to access the screen containing the local area weather specified by the user (figure 11). The contents of this panel are described in appendix A.

Usage.

CAB can manually input the CAB visibility and the CAB ceiling.

The only acceptable values for CAB visibility appear on the screen. The CAB ceiling must be ">3500" or a positive integer from 0 to 3500 feet. If the user inputs an illegal value, RCMS will generate an error message. If the inputs is acceptable, the screen updated message will appear.

Specific User Functions.

AT: Has limited access to the panel. AT cannot input data.

CAB: Has full access to the panel. CAB can input visibility and ceiling.

AF: Same as AT.

RCMS Response.

RCMS inserts the current and forecast weather into the master auto panel and into the master data base. The CAB visibility and CAB ceiling determine configuration eligibility based on weather.

User Training (While RCMS is Non-Operational).

Insert various CAB visibility and CAB ceiling values and monitor their effect on configuration eligibility on the master auto panel.

Compare RVR and DASE readings on the panel to the actual system readings available within the facility. Some lag time is involved in this process since the PC sensor data is updated less frequently than RVR and DASE displays.

Use the PF-6 key to view the local area weather.

```
                        PF6 -- WEATHER PANEL      1554 GMT

CURRENT WEATHER----------------------------------------------------------
TIME | SKY |            CEILING              | VISIBILITY | ATMOSPHERICS |
1200 | X   |                 |               |            |              |
BAR PRESSURE | TEMP | DEW | WIND | ALT SETTING | OTHER
220          | 35   |     |      |             |
1200 X 220 35
FORECAST WEATHER---------------------------------------------------------
TIME | SKY |            CEILING              | VISIBILITY | ATMOSPHERICS |
     |     |                 |               |            |              |
BAR PRESSURE | TEMP | DEW | WIND | ALT SETTING | OTHER
             |      |     |      |             |

CAB VISIBILITY     )7 ------------------------------------CAB CEILING )4500 ----
)7        1-7/8    1       1/4    |      RVR  READINGS     | PLANNED WEATHER CHANGE
 4        1-3/4    7/8     3/16   |  9R         9L         | 1)
 3        1-5/8    3/4     1/8    | 14R                    | 2)
 2-3/4    1-1/2    5/8     1/16   | 14L                    | 3)
 2-1/2    1-3/8    1/2            | 27R         27L        | O'HARE DASE
 2-1/4    1-1/4    3/8            | 32R         32L        | MIDWAY DASE
 2         1-1/8    5/16          |                        |
/PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 AREA WX/PF7 RWY
/PF8 EQUIP/PF9 TRIG/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
SCREEN UPDATED BY AT  1052 GMT
```

FIGURE 10. PF-6 WEATHER PANEL

```
                          PF6 -- AREA WEATHER PANEL      1554 GMT
    ORD FT 021515 250 -SCT 0910. 00Z CLR. 09Z VFR..
    CMI FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
    DEC FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
    DFA FT 021515 45 SCT 250 -SCT 0910. 00Z CLR. 09Z VFR..
    MDW FT 021515 250 -SCT 0910. 00Z CLR. 09Z VFR..
    MLI FT 021515 45 SCT 250 -SCT 0910. 00Z CLR. 09Z VFR..
    ORD FT 021515 250 -SCT 0910. 00Z CLR. 09Z VFR..
    PIA FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
    RFD FT 021515 45 SCT 250 -SCT 0910. 00Z CLR. 09Z VFR..
    SPI FT 021515 45 SCT 250 -SCT 0710. 00Z CLR. 09Z VFR..
    UIN FT 021515 250 -SCT 0708. 17Z 50 SCT 0810.00Z 250 -SCT 0908. 09Z VF.

    /PF6 LOCAL WX/PF12 ENTER/PA2 PRINT
```

FIGURE 11. PF-6 (REPEATED) AREA WEATHER PANEL

4.2.9 Runway Conditions Panel (PF-7).

The runway conditions panel (figure 12) displays the runway conditions for the current quarter-hour and the messages for current and planned runway outages. The messages are ordered by runway. The screen shows the runway closure status, the surface and braking conditions, and any remarks inserted by the user. The status of planned closures for the current quarter-hour also appear on the panel. The contents of the screen are described in appendix A.

In addition, the taxiway panel may be selected from the menu. This screen is described under the City of Chicago User.

Usage.

The user may change runway conditions. To simplify data entry, the user may add the complementary runway (*) when runway pairs are appropriate for common entry. The application of the user inputs and their resolution with the master data base are explained in the software description.

The allowable entries for surface conditions are CLEAR, WET, ICE, and SNOW. The acceptable values for braking conditions are NORM, GOOD, FAIR, and POOR.

The user scrolls through the runway ordered, current and planned runway message by pressing the ENTER key. After the last message is displayed, the initial messages are redisplayed. The user may insert a scroll number less than 4 to step through the messages at a different pace.

The user may select any screen on the PF key menu, including the taxiway panel.

Specific User Functions.

AT: Has full access to this panel.

CAB: Same as AT.

AF: Has limited access to this panel. AF cannot input data.

RCMS Response.

The RCMS accepts the panel inputs as current data and resolves the master data base. If a runway is taken out-of-service or put in-service, the condition is carried through to the end of the day. The resolved data base is returned to the user with the message that the screen was updated. The runway messages are withdrawn from the screen when data is entered through the PF-12 key. The background program then generates new messages based on the resolved data base. They may be viewed by reselecting the PF-7 panel.

User Training (While RCMS is Non-Operational).

Vary conditions for selected runways and review the runway messages for both current and planned outages. Examine the master auto panel to determine the effect of a runway closure on current or planned configuration eligibility. An alert message will indicate an eligibility problem. Then practice inputting data for a single runway and for complementary runways.

```
                    |RWY CLOSURE |     PF7 -- RUNWAY CONDITIONS PANEL      1400 GMT
    RWY *           |BOTH|ARR|DEP|SURFACE|BRAKING|       PAVEMENT AND SAFETY REMARKS
    ----------------|----|---|---|-------|-------|-----------------------------------------
     4R             |    |   |   |       |       |
     4L             |    |   |   |       |       |
     9R             |    |   |   |       |       |
     9L             | O  | O | O | SNOW  | POOR  |
    14R             |    |   |   |       |       |
    14L             |    |   |   |       |       |
    22R             |    |   |   |       |       |
    22L             |    | O |   | ICE   |       |
    27R             |    |   |   |       |       |
    27L             |    |   |   |       |       |
    32R             |    |   |   |       |       |
    32L             |    |   |   |       |       |
    ALL             | ¬  | ¬ | ¬ | ¬     | ¬     | ¬
    SCROLL  3 LINES---------------------------------------------------------------------
              9L CA   OTS FROM 1345
              9L CD   OTS FROM 1345


    /PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND
    /PF8 EQUIP/PF9 TAXIWAY/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
    SCREEN UPDATED BY AT  0837 GMT
```

FIGURE 12. PF-7 RUNWAY CONDITIONS PANEL

4.2.10 Equipment Panel (PF-8).

The equipment panel (figure 13) displays the equipment status for the current quarter-hour and the messages for current and planned equipment outages. The messages are ordered by runway. The screen shows the equipment status, the arrival runway minimums based on the available equipment, the CAT II and CAT III conditions, and the selected CAT operation. The status of planned outages for the current quarter-hour also appear on the panel. The contents of the screen are described in appendix A.

Usage.

The user may change equipment conditions on this panel. The application of the user inputs and their resolution with the master data base are explained in the software description.

The user may enter an "I" (In-Service) or an "O" (Out-of-Service) for equipment status. The entries for CAT II and CAT III originate from the equipment status and the facility's CAT II/CAT III Manual Selection Panel (checklist). If no equipment outages prevent a particular CAT operation, the field is blank. An "N" appears if this is not the case. A "Y" is displayed if the CAT operation is permissible and if the selector switch for the CAT operation is "ON".

The user may select any of the screens from the menu or scroll through equipment outage messages by pressing the ENTER key. After the last message is displayed, the initial message are redisplayed. The user may insert a scroll number less than 4 to step through the messages at a different pace.

Specific User Functions.

AT: Has full access to the panel

CAB: Same at AT.

AF: Same as AT.

RCMS Response.

The RCMS accepts the panel inputs as current data and resolves the master data base. If a piece of equipment is taken out-of-service or put in-service, the condition is carried through to the end of the day. The resolved data base is returned to the user with the message that the screen was updated. The equipment messages are withdrawn from the screen when new data are entered through the PF-12 key. The background program generates new messages based on the resolved data base. They may be viewed by reselecting the PF-8 panel.

User Training (While RCMS is Non-Operational).

Vary conditions for selected equipment and see the effect of equipment outages on the arrival runway minimums. Scroll through the equipment messages for both current and planned outages. Check panel inputs by reviewing the composite runway messages on the master panel.

```
                    PF8 -- EQUIPMENT PANEL      0844 GMT      |     ARRIVAL MINS
 RWY |LOC|GS |COM|OM |MM |IM |ALS| F |DME|RVR|HIR|CL |TDZ| CEIL | VIS  | RVR
 ----|---|---|---|---|---|---|---|---|---|---|---|---|---|------|------|-----
  4R | O | O | - | O | O | - | O | O | O | - |   | - | - | 4500 | 7    |
  4L |   | - | - |   | - | - |   | - |   | - |   | - | - |  402 | 1    |
  9R |   |   |   |   |   | - |   |   |   |   |   |   | - |  200 |      | 2400
  9L | F |   | - |   |   | - |   |   |   |   |   | - | - | 4500 | 7    |
 14R |   |   |   | O | O |   |   |   |   |   |   |   |   |  200 |      | 2400
 14L |   |   |   |   |   |   |   |   |   |   |   |   |   |  200 |      | 1800
 22R |   |   | - |   |   | - | O |   |   | - |   | - | - |  200 | 3/4  |
 22L |   |   | - |   |   | - |   |   |   | - |   | - | - |  200 | 1/2  |
 27R | O |   |   | O |   | - |   |   |   |   |   | - | - |  465 |      | 4000
 27L |   |   | - |   |   | - |   |   |   |   |   |   | - |  200 |      | 2400
 32R |   |   |   |   |   | - |   |   |   |   |   |   |   |  200 |      | 1800
 32L |   |   |   |   | O | - |   |   |   |   |   |   |   |  200 |      | 2400
 SCROLL  4 LINES    14R CAT II      14R CAT III      14L CAT II      14L CAT III
           4R LOC  OTS FROM 0830                   |MIDFIELD DME   | UPS1    | ENG1
           4R GS   OTS FROM 0830                   |14R RVR MID    | UPS2    | ENG2
           4R OM   OTS FROM 0830                   |14R RVR ROLL   | UPS3    | ENG3
           4R MM   OTS FROM 0830                   |14L RVR MID    | VOR     |
           4R ALS  OTS FROM 0830                   |14L RVR ROLL   |
 /PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND
 /PF8 EQUIP/PF9 TAXIWAY/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
 SCREEN UPDATED BY AT  0838 GMT
```

FIGURE 13. PF-8 EQUIPMENT PANEL

4.2.11 Trigger Value Panel (PF-9).

The trigger value panel (figure 14) displays the levels or times at which advisory messages are issued for conditions such as runway crosswinds and scheduled equipment outages. The level and time parameters are user inputs.

The crosswind and tailwind values can be set for both arrivals and departures. If the values are exceeded by calculated readings from the sensor equipment, the background program sets the appropriate wind condition flag for the affected runway. The flags are inserted into the runway composite messages. Eligible configurations with a wind condition are flagged on PF-3 but are not recommended.

Warning message times before scheduled out-of-service or return-to-service can be preset in 15-minute increments. The user may also preset the advisory time for a planned configuration change based on the reason for the change. The reason is inserted on the eligible current and planned configuration panels (PF-3 and PF-3 Repeated) when the configuration is selected.

AT and CAB have personalized trigger advisory levels for total demand, arrival demand, departure demand, wind, ceiling, and RVR values. If a level or value is entered on the screen, an advisory message is triggered if the actual condition exceeds the boundary criteria. If the message is issued, a set of asterisks (****) appear below the entry and the entry is replaced with blanks. The contents of the screen are described in appendix A.

Usage.

The user may change the trigger values at any time. To change or reset personalized values that were previously triggered, the user enters the desired information into the master data base. Blanks are valid entries. (Information on the crosswind values, wind, ceiling, and RVR levels is also sent to the 3270 PC user.)

Ninety-nine (99) is the maximum value for tailwind or crosswind levels. Warning times for equipment, runway, and planned configuration messages must be in 15-minute increments, up to a 90-minute limit. A three-digit value is valid for the demand levels. The wind follows the normal convention for velocity and direction. Both the ceiling and RVR visibility are specified in feet.

The user may select any screens from the PF key menu.

Specified User Function.

AT: Has full access to this panel. AT cannot modify CAB's trigger values.

CAB: Has full access to this panel. CAB cannot modify AT's trigger values.

AF: Has limited access to this panel. AF cannot input data.

RCMS Response.

The trigger values are distributed to the master data base and the 3270 PC data base. The PC user generates advisories based on the tailwind and crosswind levels, wind, ceiling, and RVR settings. The background program generates all the other triggered advisory messages.

The programs stacks the messages for the master auto panel and the static master panel and inserts asterisks into the data bases to prohibit regeneration of an advisory message. The user resets the trigger by changing or reentering the value on the PF-9 screen. In the case of the tailwind or crosswind advisories, the background program automatically resets this entry for the 3270 PC user whenever the condition no longer exists in the current quarter-hour.

User Training (While RCMS is Non-Operational).

Periodically insert reasonable values on this panel and monitor the results on the master auto panel. Do this over a period of time to simulate the normal process of generating advisory messages. Monitor the messages to insure that they are generated at appropriate times. For example, the return-to-service advisory message should appear at a specific quarter-hour based on the RTS value on the trigger panel.

```
                          PF9 -- TRIGGER VALUES                  1057 GMT

  ------------------------------------------------------------------------
  CROSSWIND ADVISORY LEVEL      ARR  10      DEP  15
  TAILWIND  ADVISORY LEVEL      ARR  10      DEP  15
  ------------------------------------------------------------------------
                          WARNING MESSAGE TIME BEFORE EVENT
  EQUIPMENT OTS   15    EQUIPMENT RTS   15   RUNWAY OTS   15   RUNWAY RTS   15
  PLANNED CONFIGURATION CHANGE DUE TO
          NOISE   15    RWY MAINT   60    STAFF   30     DEMAND   90   OTHER  15
  ------------------------------------------------------------------------
                TOTAL      ARR        DEP
                DEMAND     DEMAND     DEMAND     WIND     CEILING     RVR

  AT                         60
  TRIGGERED

  CAB
  TRIGGERED


  /PF1 MASTER AUTO/PF2 MASTER/PF3 CONFIG/PF4 MSG/PF5 DEMAND/PF6 WX/PF7 RWY COND
  /PF8 EQUIP/PF9 TRIG/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA1 END/PA2 PRINT
  SCREEN UPDATED BY AT  0837 GMT
```

FIGURE 14. PF-9 TRIGGER VALUE PANEL

5. PLANNING MODE OF OPERATION.

5.1 DESCRIPTION OF PLANNING MODE.

The planning screens are accessible through a selection panel. The user controls all planning panels after entering the planning mode. No user may enter a plan which another user controls. The planning logs provide a direct method of entering plans into the current mode.

The PF-12 function key is used to submit planning data directly to the master data base in the current mode from any of the three planning logs -- weather, runway closure, and equipment.

Once a plan is submitted through the planning mode, the user must wait for notification of its acceptance by the background program. A plan is rejected if it causes the selected configuration to be ineligible in the current mode (during the current quarter-hour or the next eight quarter-hours); it is replaced with the previously acceptable plan.

Only the nine quarter-hours are protected. A conflict exists only if it causes the selected configuration to be ineligible. If a conflict starts in the 10th quarter-hour or beyond, the plan is accepted and an alert is generated when that quarter-hour is processed in the current mode.

The forecast planning logs and new configuration selection's may also be submitted to the current mode through the forecast mode selection panel. (See Forecast Mode, section 6.0).

5.2 DISPLAY SCREENS.

The planning mode screens are:

a. Planning/Forecast Selection Panel.

b. Weather Planning Log.

c. Runway Closure Planning Log.

d. Equipment Planning Log.

Both the weather planning log and the runway closure planning log have space for 16 entries. The equipment planning log with the scroll function has room for 31 entries.

5.2.1 Planning/Forecast Selection Panel.

The planning/forecast selection panel (figure 15) allows the user to select the planning mode, or the forecast mode, by placing an "X" next to the desired option.

The user can go to any of the planning logs from this screen. Any panel in the PF key menu may be selected.

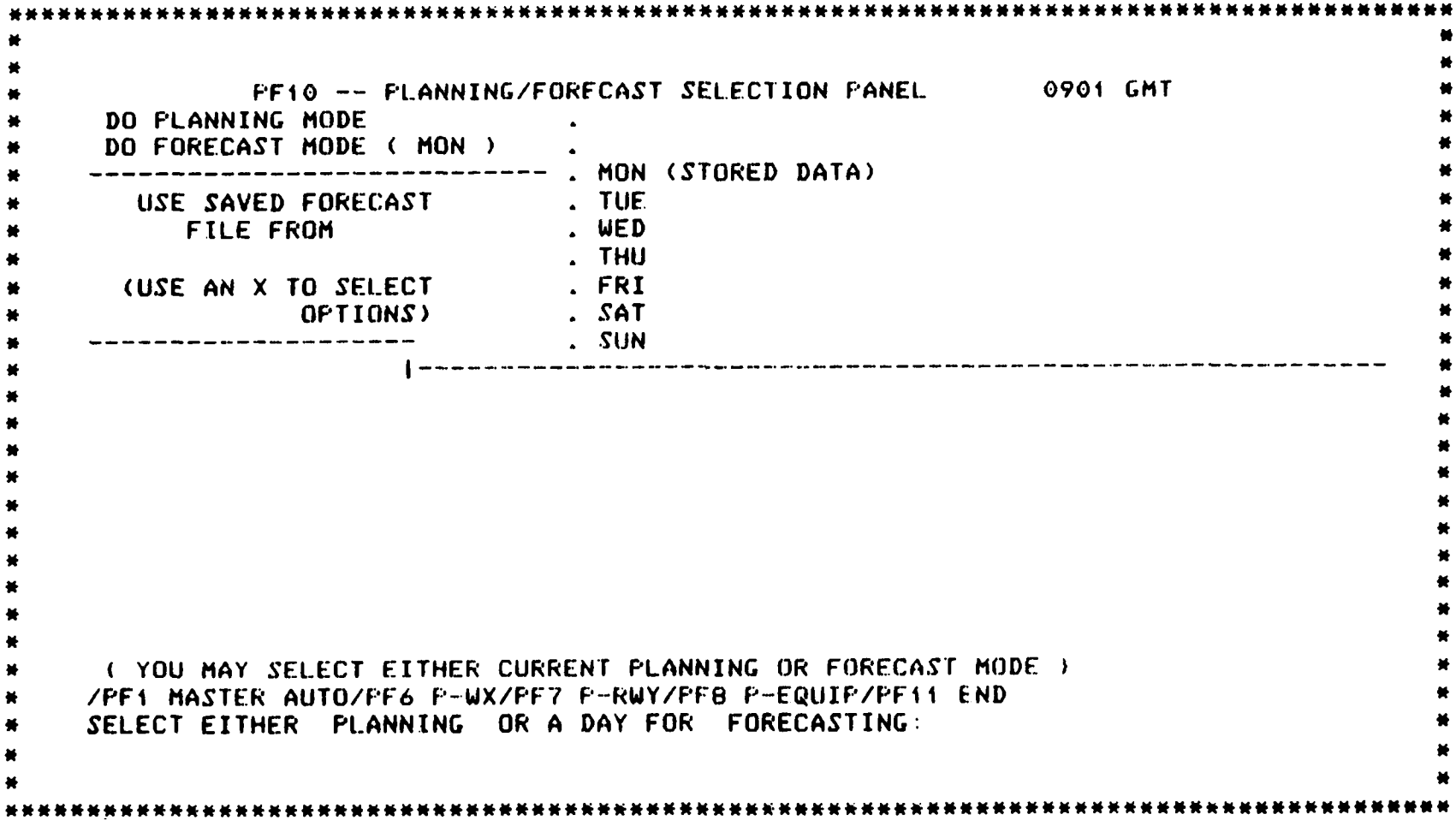


FIGURE 15. PF-10 PLANNING/FORECAST SELECTION PANEL

5.2.2 Weather Planning Log (PF-6).

The weather planning log (figure 16) permits the user to enter planned weather changes throughout the day -- ceiling, visibility, and wind. Remarks added to the panel are not included in any other displays. Entries are sorted by the start time and the data are processed in that sequence. If an entry overlaps another in time, this overlapping will occur in the same sequence as the sorted start times.

After a weather entry is submitted to either the forecast mode or the current mode, the USERID is inserted in the log. If the plan is accepted, the ACCEPT TIME is placed next to each new entry. The information on this panel is described in appendix A.

Usage.

The weather planning log enables AT to plan configuration selection and eligibility based on critical planned weather conditions. The user makes manual entries and submits them to the current mode.

The user may input up to 16 planned weather changes for the facility day. The entries can start and end at different times; they may include a combination of ceiling, visibility, and wind. The ceiling entry must be in feet (up to 99,000 feet) and the visibility in a preset form shown in table 1.

TABLE 1. VALID VISIBILITY ENTRIES

>7	1-7/8	1	1/4
4	1-3/4	7/8	3/16
3	1-5/8	3/4	1/8
2-3/4	1-1/2	5/8	1/16
2-1/2	1-3/8	1/2	
2-1/4	1-1/4	3/8	
2	1-1/8	5/16	

The wind consists of 4 characters -- 2 for the velocity followed by 2 for the degrees rounded to the tenth. The free-form remarks are local to the panel and can be seen by all users.

Any screen on the PF key menu may be selected. However, the user may not go to another panel if there are unresolved entries which indicate an incomplete user operation. For example, typing plan and not submitting the plan through the PF-12 key will prevent the user from going to another panel.

Specific User Functions.

AT: Has full access to the panel.

CAB: Has full access to the panel.

AF: Has limited access to the panel. AF cannot input data.

RCMS Response.

The background program accepts the new weather planning log and constructs the 96 quarter-hour bins of weather data based on the ordered start time of each entry. This data is used for planning and is replaced with the CAB ceiling, CAB visibility, and actual wind for the current quarter-hour in the current mode. The weather log influences only the eligibility of configurations which are planned for use in the next eight quarter-hours (not the current quarter-hour).

User Training (While RCMS is Non-Operational).

Submit a new weather plan through the PF-12 key. The background program will accept or reject the plan and generate an appropriate message.

Test the rejection process by inserting a weather condition which will cause the current configuration to become ineligible. After submitting the plan, a rejection message will be displayed with the previously acceptable plan. You may recall the rejected plan with PF-11 key.

Note the automatic process of inserting the USERID and the ACCEPT TIME for an accepted plan.

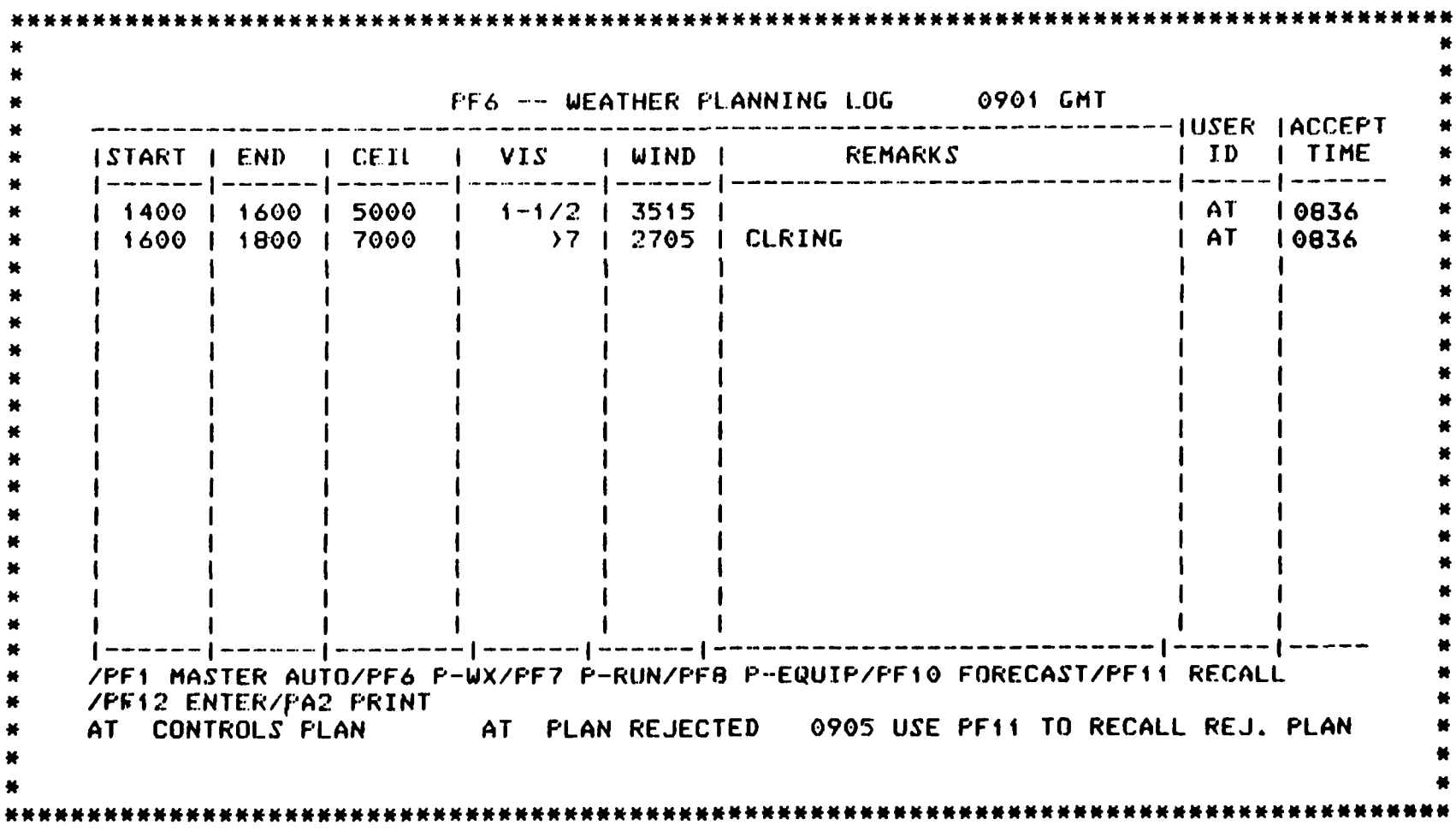


FIGURE 16. WEATHER PLANNING LOG (PF-6)

5.2.3 Runway Closure Planning Log (PF-7).

The runway closure planning log (figure 17) permits the user to enter planned runway changes throughout the day. Several conditions may be entered for a runway for various time periods. Runways may be closed and opened. Surface and braking conditions may be specified. Remarks added to the panel are not included in any other displays. Entries are sorted by runways, start time when present, then end time. The data is processed in that sequence. If an entry overlaps another in time, the overlapping will occur in the same sequence as the sorted data.

After entry is submitted to either the forecast mode or the current mode, the USERID is inserted in the log. If the plan is accepted, the ACCEPT TIME is placed next to each new entry. The information on this panel is described in appendix A.

Usage.

The runway closure planning log enables AT to plan configuration selection and eligibility based on critical planned runway conditions. The user makes manual entries and submits them to the current mode.

The user may input up to 16 planned runway conditions for the facility day. The entries can start and end at different times; they may include a combination of arrival closure, departure closure, surface conditions, and braking conditions. The valid surface conditions are CLEAR, WET, ICE, and SNOW. The valid braking values are NORM, GOOD, FAIR, and POOR.

To plan a runway closure, enter a "P" in the BOTH, ARR, or DEP column for a specified runway, and insert a CLOSED time and an OPEN time. To plan a return-to-service for a current out-of-service condition (e.g., for an "O" or an "X" on the Runway Condition Panel), place a "P" in the appropriate column(s) and enter an OPEN time.

Remarks are free-form and local to the panel. The user may select any screen on the PF key menu. However, the user may not go to another panel if there are unresolved entries which indicate an incomplete user operation. For example, typing in a plan and not entering it will prevent the user from going to another panel.

Specific User Functions.

AT: Has full access to this panel.

CAB: Same as AT.

AF: Has limited access to this panel. AF cannot input data.

RCMS Response.

The background program accepts the new runway closure planning log and constructs the 96 quarter-hour bins of runway data based on the ordered CLOSED and OPEN times. This planning data supplements the current runway conditions and the current data is resolved for each plan entry. Planned closures occur from the CLOSED times to the OPEN times. An entry is considered a return-to-service if there is no CLOSED time.

User Training.

Submit a new runway closure plan through the PF-12 key. The background diagram will accept or reject the plan and generate an appropriate message. Test the rejection process by inserting a runway condition which will cause the current configuration to become ineligible. After submitting the plan, a rejection message will be displayed with the previously accepted plan. You may recall the rejected plan with the PF-11 key.

Note the automatic process of inserting the USERID and the accept time for an accepted plan.

PF7 - RUNWAY CLOSURE PLANNING LOG 0931 GMT

RWY	BOTH	ARR	DEP	CLOSED	OPEN	SURFACE	BRAKING	REMARKS	USER ID	ACCEPT TIME
14R	P	P	P	1400	1430	SNOW			AT	
27R			P	1530	1600				AT	
27L		P		1515	1530			REPAIRS	AT	

/PF1 MASTER AUTO/PF6 P-WX/PF7 P-RUN/PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL
/PF12 ENTER/PA2 PRINT
INPUT NOT ACCEPTED, INPUT MUST BE A "P" OR A BLANK

FIGURE 17. RUNWAY CLOSURE PLANNING LOG (PF-7)

5.2.4 Equipment Planning Log (PF-8).

The equipment planning log (figure 18) permits the user to enter planned equipment changes throughout the day. Entries are sorted by runway, OTS time when present, then RTS time. The data are processed in that sequence. If an entry overlaps another in time, the overlapping will occur in the same sequence as the sorted data.

After an entry is submitted to either the forecast mode or the current mode, the USERID is inserted in the log. If the plan is accepted, the ACCEPT TIME is placed next to each new entry. The information on this panel is described in appendix A.

Usage.

The equipment planning log enables AT to plan configuration selection and eligibility based on critical planned equipment conditions. The user makes manual entries and submits to them the current mode.

The user may input up to 31 planned equipment conditions for the facility day. Each piece of equipment can have different OTS and RTS times. The valid equipment types are shown in table 2.

Enter equipment outages by placing an OTS time for a specified runway, where appropriate. Enter an RTS time to plan a return-to-service.

Remarks are free-form and local to the panel. The user may select any screen on the PF key menu. However, the user may not go to another panel if there are unresolved entries which indicate an incomplete user operation. For example, typing a plan and not entering it will prevent the user from going to another panel.

TABLE 2. VALID EQUIPMENT TYPE ENTRIES
(4 Character Limit)

LOC	F	MDME (MID-DME)
LOC1 (LOC-T1)	DME	ENG1 (14R ENG)
LOC2	RVR (RVRTD)	ENG2 (14L ENG)
GS	MID (RVRMID)	ENG3 (ASR-7 ENG)
GS1 (GS-T1)	ROLL (RVRROLL)	UPS1 (4R LOC UPS)
GS2 (GS-T2)	HIRL	UPS2 (4R GS UPS)
LOM	CL	UPS3 (9R GS UPS)
OM	TDZ	
MM	VOR	
IM		
ALS		

Specific User Functions.

AT: Has full access to this panel.

CAB: Same as AT.

AF: Same as AT.

RCMS Response.

The background program accepts the new equipment planning log and constructs the 96 quarter-hour bins of equipment data based on the ordered OTS and RTS times. The planning data supplements the current equipment conditions. The current data is resolved for each plan entry. Planned outages are out-of-service from their OTS times to their RTS times while planned RTS items are in-service from their RTS time to the end of the facility day.

SCROLL 15 LINES PF8 EQUIPMENT PLANNING LOG 0931 GMT

RWY	EQUIPMENT	OTS	RTS	REMARKS	USER ID	ACCEPT TIME
9L	LOC	0700	2300		AT	0836
22R	OM	1430	1500	MAINT.	AT	0836

/PF1 MASTER AUTO/PF6 P-WX/PF7 P-RUN/PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL
/PF12 ENTER/PA2 PRINT
AVAILABLE FOR INPUT AT REVIEWED PLAN 0837

FIGURE 18. EQUIPMENT PLANNING LOG (PF-8)

6. FORECAST MODE OF OPERATION.

6.1 DESCRIPTION OF THE FORECAST MODE.

The forecast mode is executed through a specific control panel. It permits the user to communicate directly with another user and to operate independently from the master data base and the background programs. The user can also test planned configuration changes, runway closures, equipment outages, and weather conditions throughout the facility day.

All activities in the forecast mode are performed without configuration eligibility restrictions; the plans are accepted unconditionally. Once selected configurations and compatible plans are generated in the forecast mode, they can be submitted to the current background program through the master data base using the control panel.

Forecast plans and configuration selection are made through positive action of the user; the default forecast data are the existing current data and previously accepted plans. The forecast background program advises the users of configuration ineligibility in the forecast mode.

6.2 DISPLAY SCREENS.

The forecast mode display screens are:

a. Forecast Control Panel.

b. Forecast Status Panel.

c. Forecast Configuration Panel.

d. Forecast Demand Panel.

e. Forecast Weather Planning Log.

f. Forecast Closure Planning Log.

g. Forecast Equipment Planning Log.

6.2.1 Forecast Control Panel (PF-10).

The forecast control panel (figure 19) gives the user several options in the forecast mode -- the forecast day, the forecast participants, and forecast submissions to the current background program. After the options are entered through the PF-12 key, the screen displays the selected start time and a configuration summary. The time is either the current time for "today" or the start of the facility day for the day file selected. The configuration summary highlights the ineligible configurations. It gives the start time of the configuration, its eligibility status, the arrival and departure runways, the hourly capacity, and the peak hour's demand to capacity ratio for the duration of the configuration.

Before exiting this panel, the user may submit forecast configurations, individual forecast plans, all forecast plans, or any combination of these to the current mode. One may also force the forecast data into the current mode to eliminate the possibility of the current mode rejecting the forecast data due to an ineligible configuration.

The message line (line 24) serves as a protocol line between the forecast mode and the current mode. Here the user is notified of the acceptance of rejection of the forecast data. Upon exiting the forecast mode, the message line asks the user if he wants to save the forecast mode data; enter a "Y" for yes and an "N" for no.

The contents of this screen are described in appendix A.

Usage.

This panel is the most flexible screen available to the user because it presents several options. A new PF key menu is displayed after the day and the participants are selected. The PF-12 key lets the user examine configuration eligibility throughout the day. The selected start time controls the time period of the data being displayed. The user can look at detailed data for a 2-hour period based on the selected start time. PF-3, the forecast configuration panel, contains eligible and ineligible configurations. It allows the user to select new configurations. One may also go to the forecast status panel or to one of the forecast planning logs.

The PF-1 master auto panel allows one to exit the forecast mode. The user will be asked if the day file should be save or discarded upon leaving the panel.

Several choices are available before exiting the panel. The user can submit configurations and plans to the current mode for acceptance based on configuration eligibility, or the selections can be forced causing the current mode to issue alerts if a selected configuration becomes ineligible. An "X" is used to submit forecast mode data to the current mode. Any combination of configurations and plans may be tested by or forced into the current mode.

Data is entered through the PF-12 key. An "X" is used to select the forecast day and any number of participants. The quarter-hour selected start time can then be entered if the default value is not desired. The default time for "today" is the current quarter-hour; for all other day files, it is the start of the facility day.

The user may then plan for changes in configuration, weather, runway outages, and/or equipment outages throughout the day. He may add new forecast participants at any time through the PF-12 key.

The user may scroll through the configurations using the "enter" key. The peak hour demand to capacity ratio is an indication of the configuration's responsiveness. A 1.0 or greater means the demand will exceed capacity while the configuration is in use.

Upon exiting the forecast mode, the user is asked if the forecast file is to be saved or erased by the program. A special day file is provided to save any activity which may be required for access in the immediate future.

Specific User Functions.

AT: Has full access to this panel.

CAB: Same as AT.

AF: Same as AT.

RCMS Response.

When the user enters the forecast mode, the background program transfers the current or day file data into the forecast mode data base. When the forecast mode data base is submitted to the master data base, the background program accepts or rejects the data based on configuration eligibility in the current mode. If the data is forced, the data is accepted unconditionally. If the current conditions on the PF-2 Status Panel are changed with the WHAT IF function, the user is not allowed to force a submission.

User Training (While RCMS is Non-Operational).

Exercise simple functions first then try to forecast with other participants.

Enter the forecast day, "today," with the PF-12 key and then scroll through the configurations for the remainder of the facility day.

Modify the forecast runway closure planning log. Close a runway that should make the current configuration ineligible. Test the plan using the PF-12 key and wait for the rejection message. Then go to forecast control panel, review the configuration summary, and note the ineligible configuration(s). Then modify the plan so that it will be accepted. Then test that plan and look at the configuration summary.

Next, use the PF-10 key to select other forecast participants. Coordinate by phone and exchange information through the forecast planning panels. To update your screen, refresh the panel after another participant modifies a panel. One of the participants should submit the changes to the current mode. Then all users should return to the master auto panel to monitor the change to the master data base and see if any selected configurations become ineligible within two hours.

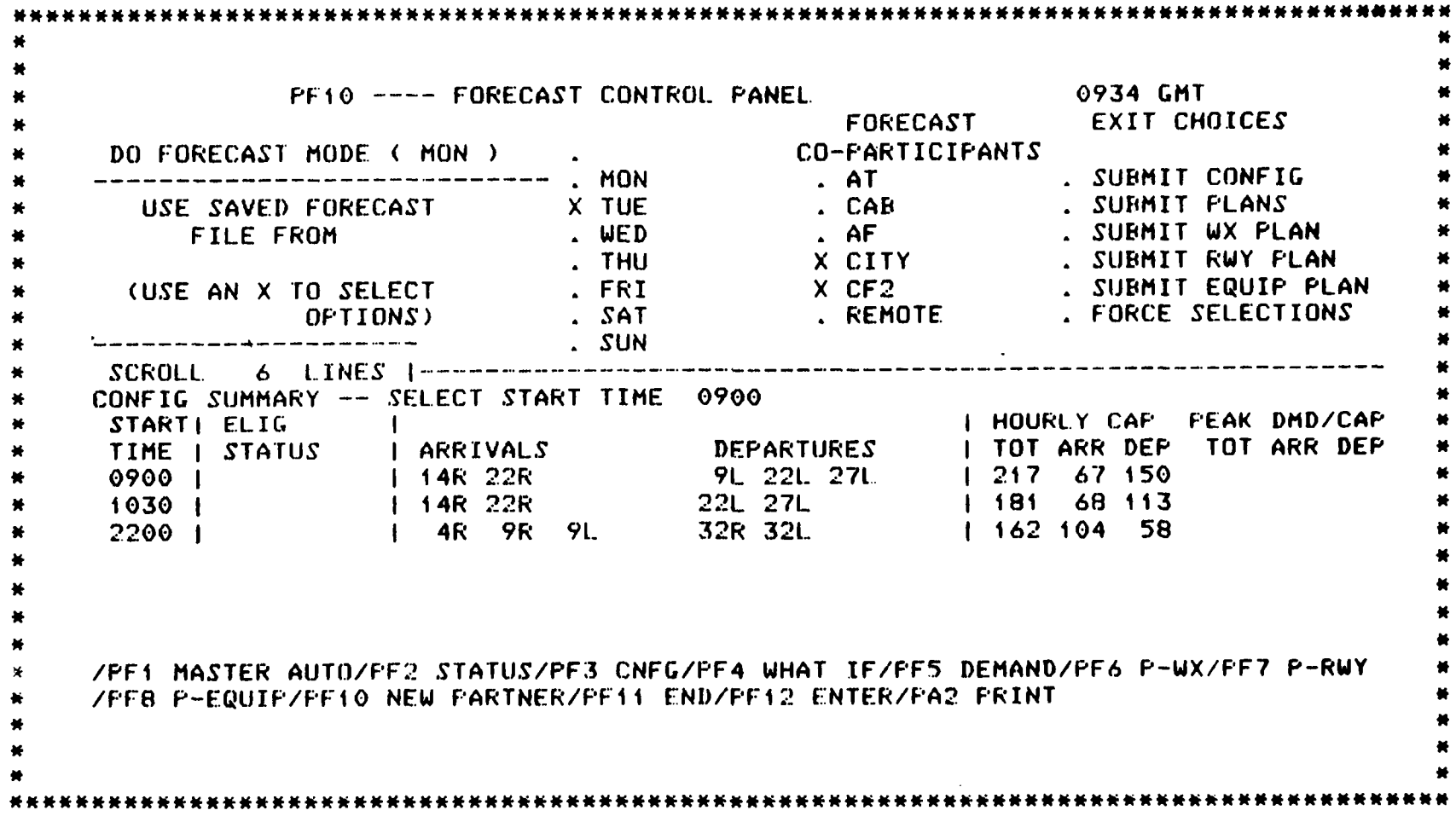


FIGURE 19. PF-10 FORECAST CONTROL PANEL

6.2.2 Forecast Status Panel (PF-2).

The forecast status panel (figure 20) displays the equipment, weather, and runway status for the quarter-hour selected by the user. The time is displayed on the message line. If the panel is accessed from the forecast control panel (PF-10), conditions are depicted for the selected start time. If accessed from the forecast configuration panel (PF-3), the time slot of that panel controls the data displayed. The arrival runway minimums are calculated whenever the status screen is selected. The contents of this panel are described in appendix A.

Usage.

Forecast planning data is displayed on this screen. Inputs to this panel affect only the selected quarter-hour. Current out-of-service equipment or runways can be returned-to-service for WHAT IF testing.

Specific User Functions.

AT: Has full access to this panel.

CAB: Same as AT.

AF: Has limited access to this panel. AF cannot input data.

RCMS Response.

This panel displays the output for the forecast mode equipment, weather, and runway status. The background program does not accept input from this panel.

User Training (While RCMS is Non-Operational).

Review this panel after changing one of the forecast planning logs.

Make changes for the current quarter-hour for "today." Enter them through the PF-12 key. Your changes will be highlighted to indicate differences with the original current conditions.

```
                PF2 -- FORECAST STATUS PANEL        TIME SLOT 0900 TO 0915
    RWY |LOC|GS |COM|OM |MM |IM |ALS| F |DME|RVR|HIR|CL |TDZ|CA/D|S/B | ARRIVAL MINS
                                                                        | CEIL  VISIB
    ----|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|------------
     4R | O | O | - | O | O | - | O | O | O | - |   | - | - |    |    | 4500  7
     4L |   | - | - |   | - | - |   | - |   | - |   | - | - |    |    |  402  1
     9R |   |   |   |   |   | - |   |   |   |   |   |   | - |    |    |  200 1800
     9L | O | O | - | O | O | - |   |   |   |   |   | - | - | OO | SB |  200 1800
    14R |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |  200 1800
    14L |   |   |   |   |   |   |   |   |   |   |   |   |   |    |    |  200 1800
    22R |   |   | - |   |   | - |   |   |   | - |   | - | - |    |    |  200    1/2
    22L | P | P | - | P | P | - | P | P | P | - | P | - | - |    |    |  200    1/2
    27R |   |   |   |   |   | - |   |   |   |   |   | - | - |    |    |  200 1800
    27L |   |   | - |   |   | - |   |   |   |   |   |   | - |    |    |  200 1800
    32R |   |   |   |   |   | - |   |   |   |   |   |   |   |    |    |  200 1800
    32L |   |   |   |   |   | - |   |   |   |   |   |   |   |    |    |  200 1800

    14R CAT II          |14R R-MID          |UPS1
    14R CAT III         |14R R-ROLL         |UPS2          WEATHER
    14L CAT II          |14L R-MID          |UPS3       CEIL  VISIB
    14L CAT III         |14L R-ROLL         |ENG1       )4500     )7
                        |VOR                |ENG2
                        |MIDFIELD DME       |ENG3

    /PF1 MASTER AUTO/PF2 STATUS/PF3 CNFG/PF4 WHAT IF/PF5 DEMAND/PF6 P-WX/PF7 P-RWY
    /PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
    SCREEN UPDATED BY AT   0836 GMT
```

FIGURE 20. FORECAST STATUS PANEL (PF-2)

6.2.3 Forecast Configuration Panel (PF-3).

The forecast configuration panel (figure 21) is similar to the current mode eligible configuration panels with the following exceptions.

1. All eligible and ineligible configurations are displayed and may be selected by the user.

2. An ineligible configuration has an asterisk (*) next to its number.

The contents of the panel are described in appendix A.

Usage.

The user may select a new planned configuration; it applies to the screen's quarter-hour time slot and continues to the end of the day. Certain criteria is applied to this process, namely:

1. The new selection can be eligible or ineligible for each time period.

2. The new selection only replaces the old selection and does not replace a planned configuration change later in the day.

The user can scroll through the list of configurations by hitting the ENTER key. After the last of the configurations is displayed, the scroll function returns to the top of the list. The user may insert a scroll number less than 15 to step through the configurations at a different pace.

The user may enter a new configuration selection for a quarter-hour and specify the reason for the change. Any screen in the PF key menu may be selected.

Specific User Functions:

AT: Has full access to this panel.

CAB: Has limited access to this panel. CAB cannot select configurations.

AF: Same as CAB.

RCMS Response.

After the user enters a new configuration selection through the PF-12 key, RCMS checks the eligibility. If it is eligible for at least an hour, the screen is updated and the user is allowed to select another function key.

User Training (While RCMS is Non-Operational).

Check the time slot on this panel. The time should agree with the selected start time on the forecast control panel. Use the PF-3 key to advance through the quarter-hours. Use PF-4 to return to your original quarter-hour. Select a new configuration through the PF-12 key. Then go to PF-10 to review the configuration summary to see the changes in the day's planned configurations.

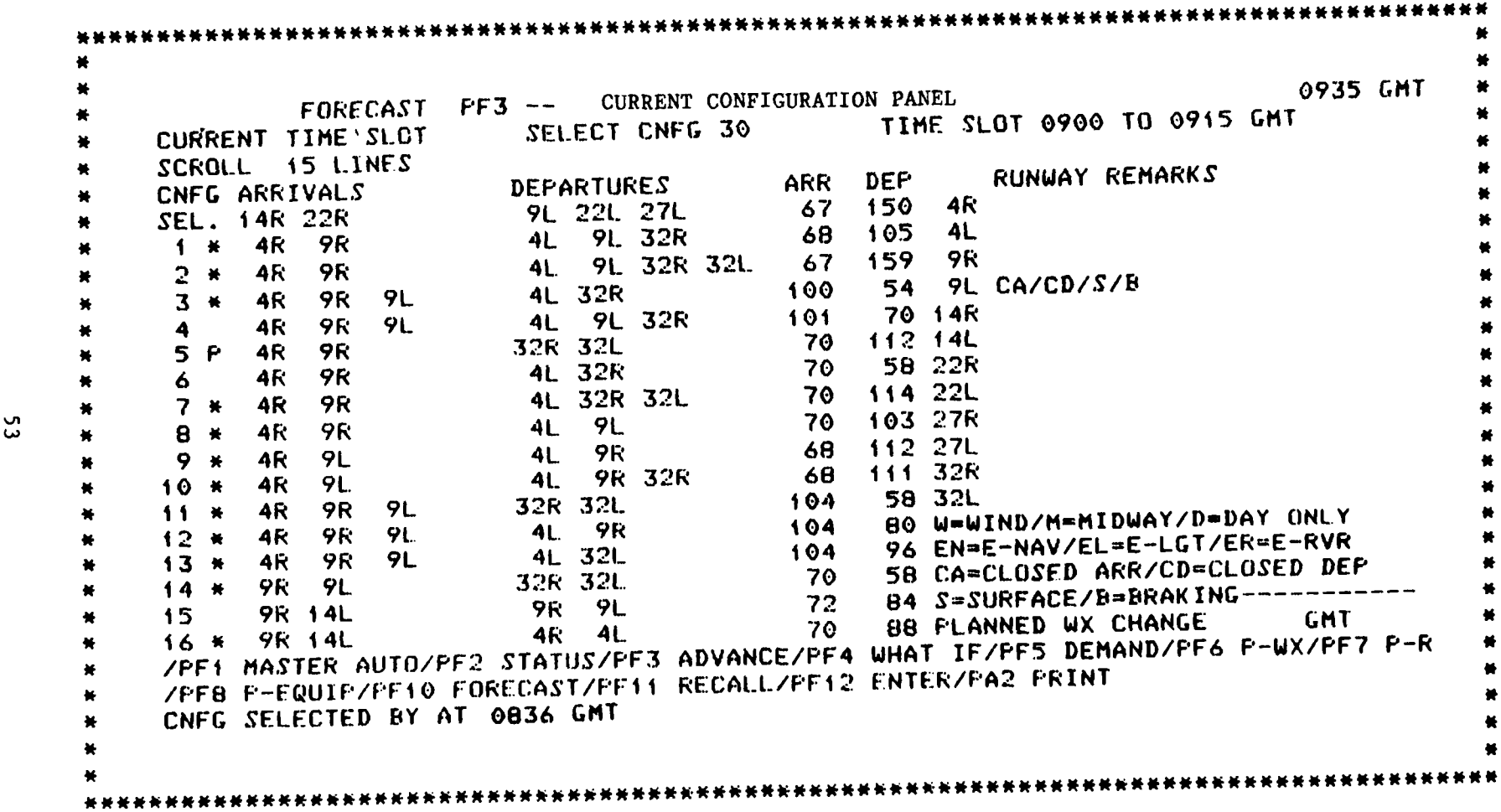


FIGURE 21. FORECAST CONFIGURATION PANEL (PF-3)

6.2.4 Forecast Demand Panel (PF-5).

The forecast demand panel (figure 22) is identical to the current mode demand panel with the following exception: the start time of the demand on this panel is the selected start time on the forecast selection panel (PF-10). The contents of this panel are described in appendix A.

Usage.

There are no user interaction with this panel.

Specific User Functions.

AT: The AT user has full access to this panel.

CAB: Same as AT.

AF: Same as AT.

RCMS Response.

This information panel displays the forecast demand. "Today's" demand is current Central Flow Control data. Other day files are historical profiles of Central Flow Control data.

User Training (While RCMS is Non-Operational).

Review this panel using different selected start times on the forecast control panel.

```
                    FORECAST PF5 -- DEMAND PANEL      1200 GMT
              ARRIVALS   X/Y/Z X= TOTAL Y=HEAVY Z= LIGHT     DEPARTURES
     TIME      TOTAL     KUBBS     CGT       PLANO     FARMM     TOTAL     N     E     S     W
    1200         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    1215         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    1230         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    1245         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    ------------------------------------------------------------------------------------------
    1200 1300   100     12/4/4     4/ /4      4      80/40/40    100     20    20    40    20
    ------------------------------------------------------------------------------------------
    1300         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    1315         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    1330         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    1345         25      3/1/1     1/ /1      1      20/10/10     25      5     5    10     5
    ------------------------------------------------------------------------------------------
    1300 1400   100     12/4/4     4/ /4      4      80/40/40    100     20    20    40    20
    ------------------------------------------------------------------------------------------
    1400        100     12/4/4     4/ /4      4      80/40/40    100     20    20    40    20
    1500        100     12/4/4     4/ /4      4      80/40/40    100     20    20    40    20
    1600        100     12/4/4     4/ /4      4      80/40/40    100     20    20    40    20
    1700        100     12/4/4     4/ /4      4      80/40/40    100     20    20    40    20
    /PF1 MASTER AUTO/PF2 STATUS/PF3 CNFG/PF4 WHAT IF/PF5 DEMAND/PF6 P-WX/PF7 P-RWY
    /PF8 P-EQUIP/PF10 FORECAST/NO RECALL/NO ENTER/PA2 PRINT
    SCREEN UPDATED BY CF  1200 GMT
```

FIGURE 22. FORECAST DEMAND PANEL (PF-5)

6.2.5 Forecast Planning Panels (PF-6, PF-7, and PF-8).

The forecast planning panels are:

a. Forecast Weather Planning Log (PF-6).

b. Forecast Runway Closure Planning Log (PF-7).

c. Forecast Equipment Planning Log (PF-8).

The panels are shown in figures 23, 24, and 25, respectively. They are identical to the logs for the planning mode with one exception -- they operate only in the forecast mode and cannot be submitted directly to the current mode.

Usage.

The user interaction with the forecast planning logs is the same as the interaction within the planning mode.

Specific User Functions.

All users of the forecast mode have access to forecast planning logs.

RCMS Response.

The forecast background program accepts all new forecast mode planning logs and constructs the 96 quarter-hour bins of planned data based on the ordered times. The plans are applied in the same manner as in the current background program, but do not undergo acceptance or rejection testing. The configurations are listed regardless of their eligibility in the forecast mode.

User Training (While RCMS is Non-Operational).

Practice with the planning logs before working with the forecast planning logs because they are identical with one exception. In the forecast mode, forecast plans are not rejected due to configuration eligibility. You may submit forecast plans to the current mode through the forecast control panel.

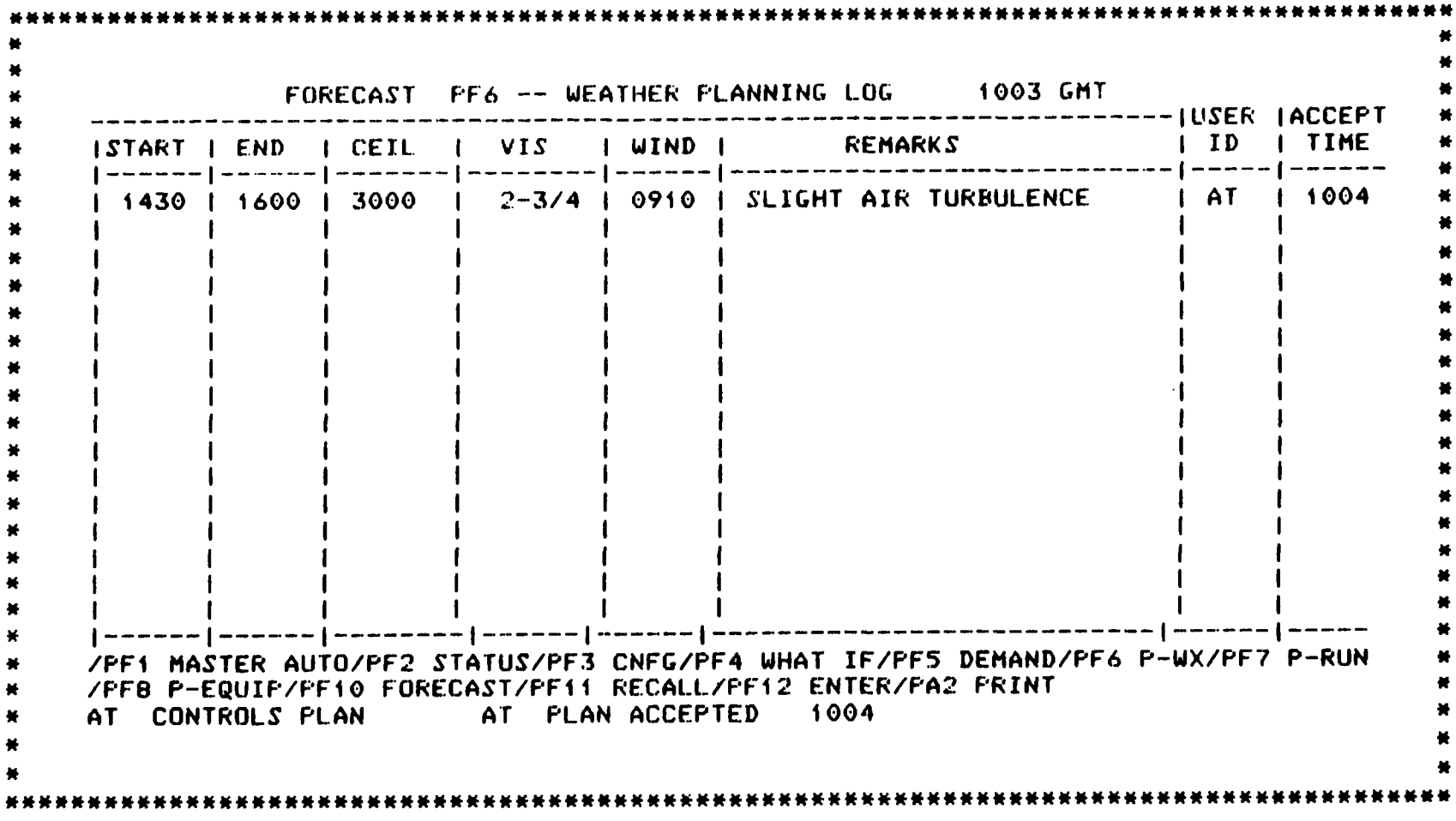


FIGURE 23. FORECAST WEATHER PLANNING LOG (PF-6)

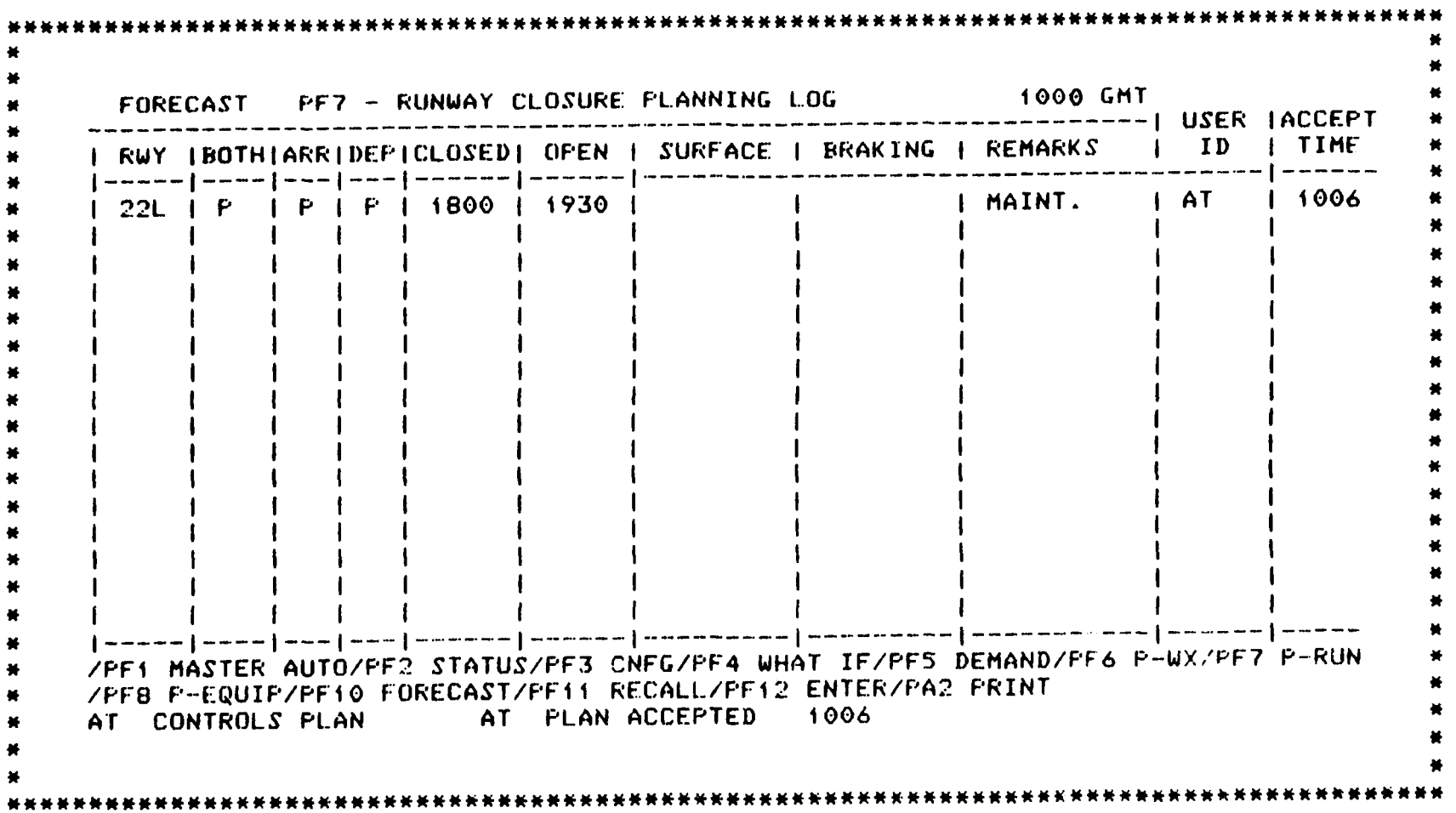


FIGURE 24. FORECAST RUNWAY CLOSURE PLANNING (PF-7)

SCROLL 15 LINES FORECAST PF8 EQP PLANNING LOG 1007 GMT

RWY	EQUIPMENT	OTS	RTS	REMARKS	USER ID	ACCEPT TIME
9L	LOC	0700	2300		AT	1008
32L	OM	1400	1900	REPAIRS	AT	1008

/PF1 MASTER AUTO/PF2 STATUS/PF3 CNFG/PF4 WHAT IF/PF5 DEMAND/PF6 P-WX/PF7 P-RUN
/PF8 P-EQUIP/PF10 FORECAST/PF11 RECALL/PF12 ENTER/PA2 PRINT
AT CONTROLS PLAN AT PLAN ACCEPTED 1008

FIGURE 25. FORECAST EQUIPMENT PLANNING LOG (PF-8)

7. 3270 PC USER (SENSOR DATA).

7.1 DESCRIPTION OF THE 3270 PC USER.

The 3270 PC collects the status and equipment readings from the facility sensor equipment. The data are displayed on the 3270 PC and automatically forwarded to the PC user on the IBM 4321 every two minutes or whenever a significant event occurs.

As described in appendix B, the PC user processes the sensor data to provide equipment status and readings to the PC data base and resolves the master data base.

It also generates the trigger messages and adds them to the master data base. They include the AT and CAB advisories for wind, ceiling, and RVR levels as well as the crosswind and tailwind advisories for each runway.

The program updates the ceiling and wind information on the master auto panel. If there is a new equipment failure, the program also generates an alert message for the master auto panel and the message panel. Then the current background program starts processing the resolved master data base for configuration ineligibility, alerts, and advisories.

7.2 EQUIPMENT STATUS AND READINGS PANEL.

The equipment status and readings panel is shown in figure 26 and its contents are described in appendix A. Each bit or bit pattern represents the status of the sensor (appendix B, Application of Sensor Data to RCMS Logic). For example, the localizer bit pattern represents Main, Standby, Abnormal Off, Abnormal Steady, Abnormal Flashing, Trans 1, Trans 2, and Alarm -- in the exact sequence. A "1" mean the equipment is on, a "0" means its off. The equipment readings (e.g., RVR readings) are displayed in digital or character form for immediate use by the program.

Usage.

The 3270 PC sensor accumulation program resides in the PC. The 3270 PC has some unique features -- keystrokes simulation, emulation of an operator's data entry onto the panel, and automatic initiation of the PF-12 function key. The panel is submitted every two minutes or whenever any significant event occurs, such as an equipment failure.

Sensor data is automatically written to the panel by the PF-12 function key emulator. The PC user program updates the PC data base and resolves the master data base. It generates alerts and triggered advisories for AT and CAB. It also updates the ceilometer and wind readings on the master auto panel every two minutes.

Any triggered advisories will disengage the appropriate triggers on PF-9. The triggers must be reset by the user. Crosswind advisories are cleared by the PC user program on every update cycle.

Specific User Functions.

The PC user program sends a special system message to each user (AT, CAB and AF) concerning any equipment failure. The user will get the message even if he is reviewing a static panel.

RCMS Response.

The current background program processes the resolved data in the master data base. If a configuration becomes ineligible due to an equipment outage, an alert is issued. In any case, an out-of-service message is generated.

User Training (While RCMS is Non-Operational).

Observe the operation of the PC session and familiarize yourself with the keyboard operation for running the host sessions on the 3270 PC.

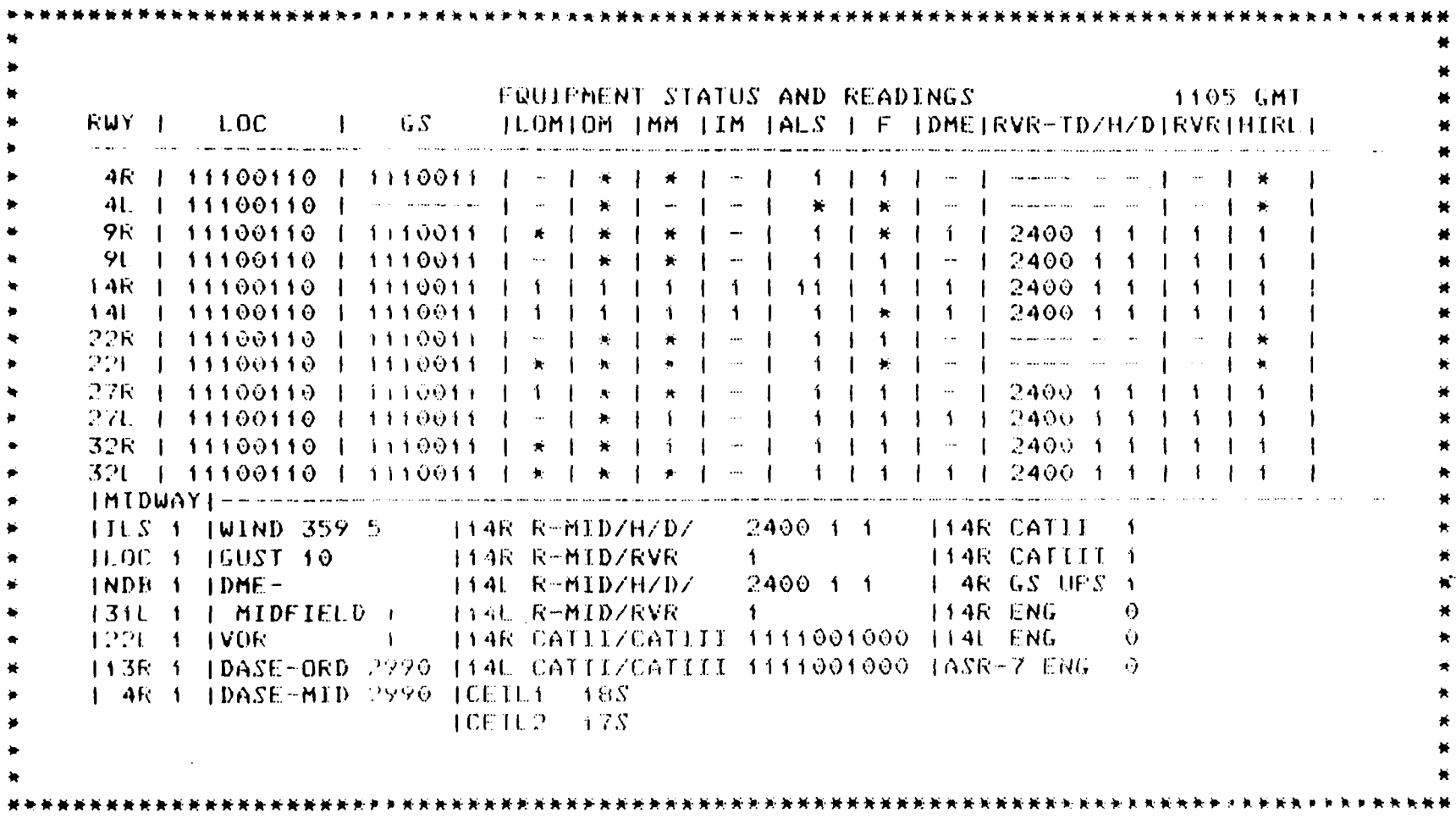


FIGURE 26. EQUIPMENT STATUS AND READINGS PANEL

8. CITY OF CHICAGO USER.

8.1 DESCRIPTION OF THE CITY OF CHICAGO USER.

The City of Chicago user participates in the current mode, the planning mode, and the forecast mode with AT, CAB, and AF. The City cannot access the master auto panel but can manually monitor the PF-2 master panel. The taxiway/notam screen was constructed to meet the specific needs of the city; it is accessible from the PF-7 runway conditions panel and PF-8 equipment panel.

Several screens are used to generate a data file for use with the existing ITS video distribution system. Controlled by a menu screen, a PC program processes this file. A keyboard interface device drives the video distribution system. Special terminal operating procedures are required for the RCMS host interactive session and the PC program session on the IBM PC-XT.

8.1.1 Special Operating Procedures.

The City of Chicago user will operate either from a local area or a remote location. The terminal emulation programs for the two locations have different communication arrangements with the IBM 4321 processor.

A Bi-sync (BSC) protocol with a modem is used for the remote terminal. It employs a 3274 emulation program with certain print/send commands to obtain file data. See the user's guide for Binary Synchronous 3270 Emulation.

The local terminal employs a 3278 emulation package with certain receive/send commands to transfer files. See the user's guide for 3278/79 Emulation Program.

The principles of operation for both are essentially the same. The operator can switch between the emulation process and the PC session program by disengaging or engaging the host session. The configuration of the 3278/79 emulation program permits continuous communications with the IBM 4321 in a disconnected mode without terminating the session. This gives the operator immediate access to RCMS after issuing the logon command (LOGON CITY CITY). Establish the emulation program and switch between sessions as follows:

Instructions to LOGON to RCMS

LOGON CITY CITY

Instructions to Switch from PC to RCMS

For BSC -- ALT + F10 in command mode

For 3278 -- ALT + ESC then LOGON CITY CITY

Instructions to Switch from RCMS to PC

For BSC -- EXIT (Hold) in command mode

For 3278 -- PA1 then ALT + ESC

Before using the emulation program, configure the BSC terminal session to establish the characteristics of the program and to define the method of file transfer. The required configuration is 3270 PRINTER set to Buffered Printer.

The emulation programs execute the file transfers differently. For the BSC, select the command mode, set the PRINT file specification to the filename CITY, and press the SHIFT and PRINT SCREEN keys. This directs all print files from the CITY user program on the IBM 4321 to the designated PC disk file.

For the 3278, enter the PC command mode and the RECEIVE filename command. The PA1 key terminates RCMS program and places the last session in a CMS command mode.

The exact instructions for the operation of the City of Chicago user will be defined during the customization of RCMS.

8.2 DISPLAY SCREENS.

The City of Chicago User provides input to the taxiway/notam screen accessible from the runway conditions panel (PF-7) and the equipment panel (PF-8). All other screens available to this user are described under the current, planning and forecast modes of operation.

A menu screen enables the user to select various options of distributing the runway, taxiway, and notam data to the TV presentations currently supplied to the airlines and the FAA. The user can also preview the data screens being distributed.

The City of Chicago's primary screens are:

a. Taxiway/Notam Panel.

b. RCMS to ITS Interface Menu.

8.2.1 Taxiway/Notam Panel (PF-9).

The taxiway/notam panel (figure 27) is a split screen displaying the taxiway data (including an "18-36" entry and a RAMP entry) and seven notam entries. A total of 30 taxiways and 21 notams are available through a scroll function on the screen. The panel contents are described in appendix A.

Usage.

The City of Chicago enters the taxiway and notam information into the master data base through the PF-12 key. The current background program shares the data with the other RCMS users.

Using the scroll function, the user can enter up to 30 taxiway entries and 21 free-form notams.

The allowable entries for the surface conditions are CLEAR, WET, ICE, and SNOW. HARD PACKED and FROZEN may be entered in the remarks column. Runway braking action may be described as NORM, GOOD, FAIR, and POOR. All other remarks are free-form.

Specific User Function.

CITY: Has full access to this panel. Only CITY can input data.

Others: Have limited access to this panel. They cannot enter data.

RCMS Response.

RCMS puts the screen data into the master data base. The screen data and all other relevant information are put into a file and forwarded to the city by a file transfer program.

User Training (While RCMS and ITS Video Distribution System are Non-Operational).

Enter taxiway and notam data. Note the update message on the screen and then observe the preview output of the video distribution system. See the following sections concerning the Video Distribution Menu.

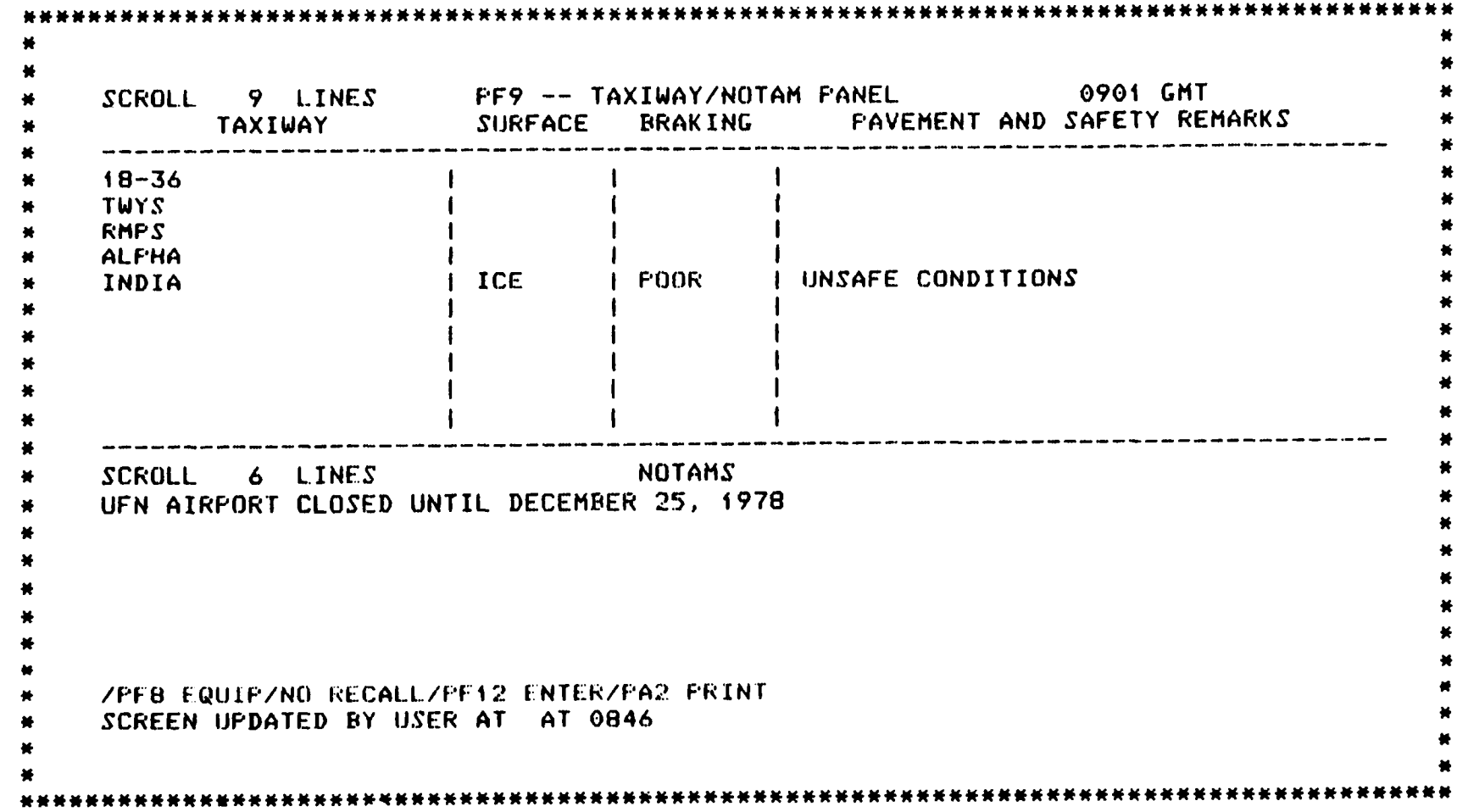


FIGURE 27. TAXIWAY/NOTAM PANEL

8.2.2 RCMS to ITS Interface Menu.

The interface menu (figure 28) is accessed by entering the PC session and executing the MENU program. There are four choices on the screen which determine how the video distribution program VIDEO feeds the TV presentation.

a. The user can send to the TV system a combination of the data (runway, taxiway, and/or notams) for selectable time periods for each page of data.

b. A hold-for-review feature presents each screen of data in sequence before sending it to the distribution system. After the final screen is reviewed, this function is suppressed until the operator reruns the VIDEO program.

c. The operator can print each data screen before it is sent to the distribution system. After the final screen is printed, this function is suppressed until the operator reruns the VIDEO program.

d. The operator can display a screen on the PC whenever it is sent to the TV system.

Preview screens for runways, taxiways, and notams are shown in figures 29 and 30.

Usage.

The City of Chicago enters the desired selections on this screen. The VIDEO program in the PC-XT uses this information to distribute the data in the preview screens to the TV presentation.

While operating in a PC session on the PC-XT, call the MENU program and review the previously set parameters or change them to suit a particular requirement. After entering the new selections, execute the VIDEO program and monitor the results for proper response to the selected features -- (SEND, PRINT, PREVIEW, and/or DISPLAY).

You can remain in the PC session or rejoin the RCMS host session. Your interaction depends upon which emulation program (BSC or 3278) was implemented for the City. Refer to section 8.1.1 for special operating procedures.

Specific User Function.

CITY: Has full access to this panel. The program executes in the PC session of PC-XT, it is accessible only to this user.

RCMS Response.

RCMS does not respond to this program since it transmits file data to the video distribution system through the VIDEO program.

User Training (While RCMS and ITS Video Distribution System are Non-Operational).

Establish communications using the RCMS software, enter the PC session, and run the MENU program. Note the changes you make before running the VIDEO program. Verify the effects of the selected features.

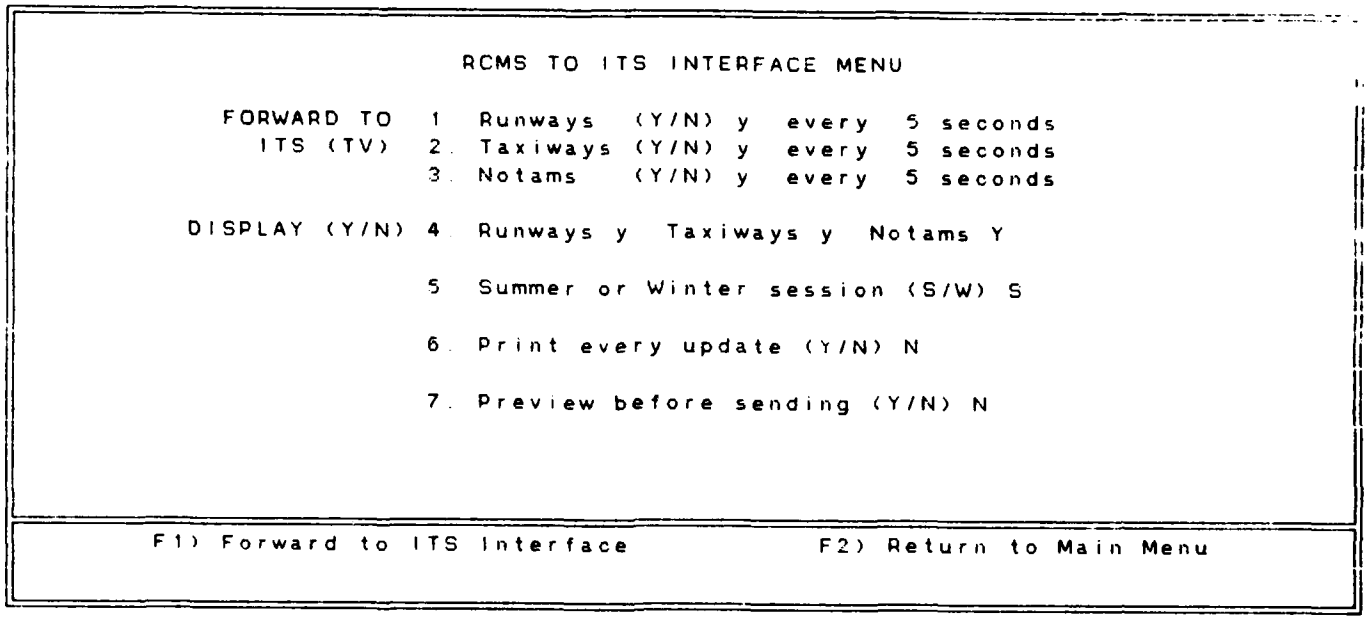


FIGURE 28. RCMS TO ITS INTERFACE MENU

```
1300 LT ORD FIELD COND REPORT THU 05/22/86
 RWYS        STATUS        REMARKS          B/A

 4R
 4L
 9R
 9L
 14R
 14L
 22R
 22L
 27R
 27L
 32R
 32L
 TWYS (ALL)
 18-36
 RAMPS


-------------------------------------------------

                                                  PRESS ENTER
                          SENDING RUNWAYS

        F1) Forward to ITS Menu                F2) Return to Main Menu
```

```
 1300 LT ORD FIELD COND REPORT THU 05/22/86
TAXIWAYS      STATUS        REMARKS          B/A

10-36
RAMPS
14L-32R TWY & HYSPDS
9L-27R TWY
4L-22R TWY & HYPSDS
OLD SCENIC
NEW SCENIC
SCENIC TO 14L
A/F SCENIC TWY
SE TWY TO AFB
A F  SOUTH TWY
A F CENTER TWY
NW HANGAR ALLEY
SW HANGAR ALLEY
T-6 B BYPASS
14R-22L TWY & T'S
9R-27L TWY
-------------------------------------------------

                                                  PRESS ENTER
                          SENDING TAXIWAYS

        F1) Forward to ITS Menu                F2) Return to Main Menu
```

FIGURE 29. RUNWAY AND TAXIWAY VIDEO SCREENS

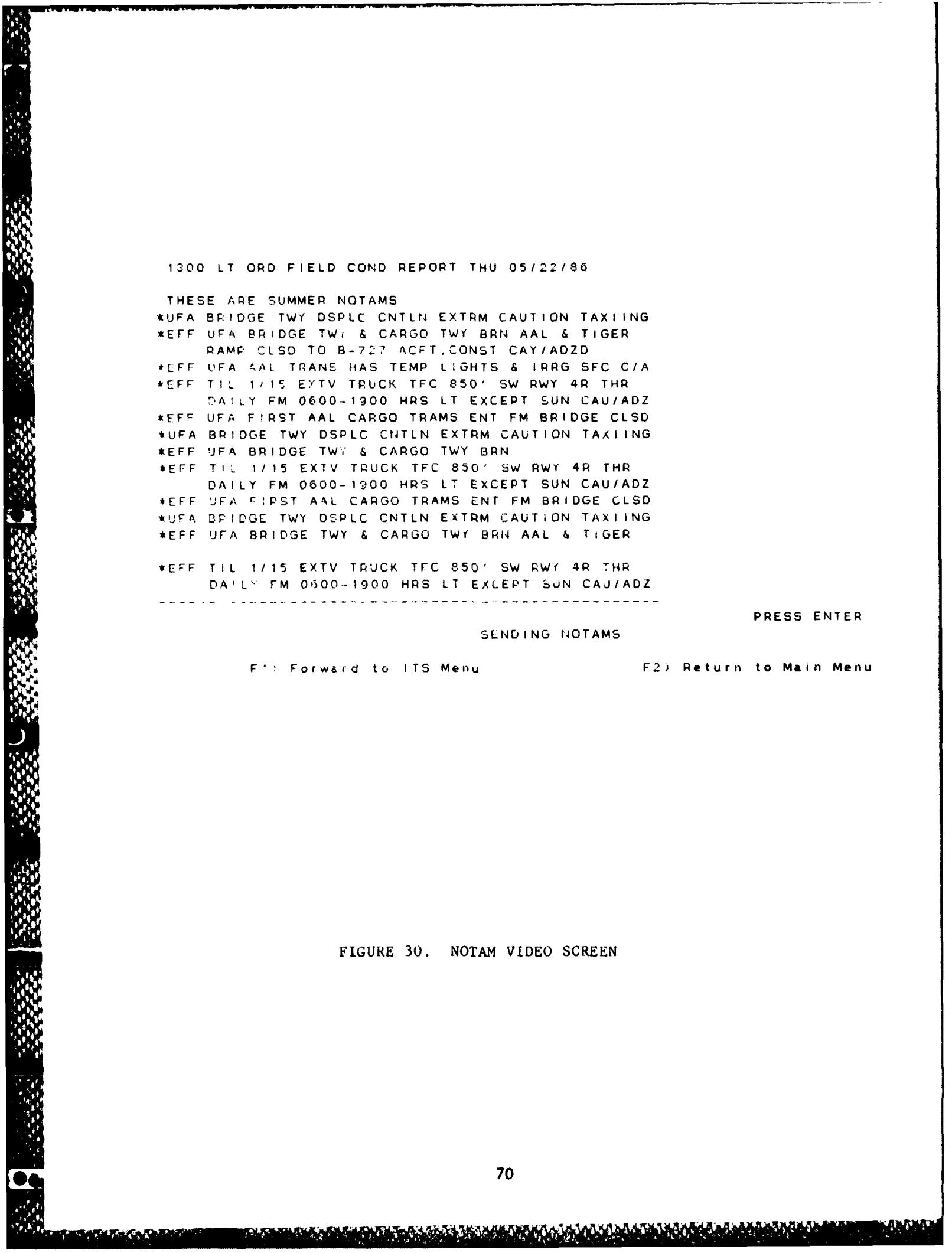


FIGURE 30. NOTAM VIDEO SCREEN

APPENDIX A

CONTENTS OF USER SCREENS

PANEL NAME: PF-1 MASTER AUTO PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS				
1	HEADINGS				
2	CURRENT TIME	CURRENT CONFIGURATION ARR & DEP RUNWAYS	TOTAL, ARR & DEP CAPACITY		
3	TIME OF PLANNED CONFIG CHANGE	PLANNED CONFIG ARR & DEP RUNWAYS	TOTAL, ARR & DEP CAPACITY		
4	DASHES -				
5	HEADINGS				
6	ARRIVAL RUNWAY	MINIMUMS OF CEILING, VIS, RVR	SAME FOR 2ND RUNWAY	NOTEPAD AREA	
7	", (THIRD RUNWAY)	"	" (4TH RUNWAY)	"	
8	DASHES -				
9	CURRENT WEATHER	ACTUAL WIND			
10	FORECAST WEATHER	AND CEILING			
11	DASHES -				
12	HEADINGS				
13	QUARTER-HOUR TIME	TOTAL ARR DEMAND	TOTAL ARR FIX DEMAND	TOTAL DEP DEMAND	TOTAL DEP FIX DEMAND
14	"	"	"	"	"
15	HEADING & DASHES (TIME OF DAY - GMT)				
16	CURRENT CONFIGURATION RUNWAY COMPOSITE MESSAGES				
17	"				
18	"				
19	"				
20	"				
21	"				
22	MENU OF PROGRAM FUNCTION KEY (PF)				
23	MENU OF PROGRAM FUNCTION KEY (PF)				
24	ALERT, ADVISORY, AND ORDINARY MESSAGES				

PANEL NAME: PF-2 MASTER PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS (HIGHLIGHTED)
1	TITLE OF PANEL ("STATIC DISPLAY") PANEL SELECTION TIME (GMT)
2	HEADINGS
3	PANEL ACCESS TIME | CURRENT CONFIG ARR & DEP RUNWAYS | TOTAL, ARR & DEP CAPACITY
4	TIME OF PLANNED CONFIG CHANGE | PLANNED CONFIG ARR & DEP RUNWAYS | "
5	DASHES -
6	HEADINGS
7	ARRIVAL RUNWAY | MINIMUMS OF CEILING VISIBILITY, RVR | SAME FOR SECOND RUNWAY | NOTEPAD AREA
8	" | " (THIRD RUNWAY) | " (FOURTH RUNWAY) |
9	DASHES -
10	CURRENT WEATHER | ACTUAL WIND
11	FORECAST WEATHER | AND CEILING
12	DASHES -
13	HEADINGS
14	QUARTER-HOUR TIME | TOTAL ARR DEMAND | ARRIVAL FIX DEMAND | TOTAL DEP DEMAND | DEPARTURE FIX DEMAND | NO.
15	QUARTER-HOUR TIME | | | | | OF PLANS
16	SCROLL FUNCTION (NUMBER OF SCROLL LINES FOR ALL RUNWAY COMPOSITE MESSAGES)
17	ALL RUNWAY COMPOSITE MESSAGES (RUNWAY ORDERED)
18	"
19	"
20	"
21	"
22	MENU OF PROGRAM FUNCTION KEY (PF)
23	MENU OF PROGRAM FUNCTION KEY (PF)
24	PROTOCOL MESSAGE LINE

PANEL NAME: PF-3 ELIGIBLE CURRENT CONFIGURATION PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS			
1	TITLE OF PANEL			PANEL SELECTION TIME (GMT)
2	SLOT TIME OF PANEL	CONFIGURATION SELECTION (NUMBER)		PANEL QUARTER-HOUR TIME SLOT
3	SCROLL FUNCTION	(NUMBER OF SCROLL LINES) (FOR ELIGIBLE CONFIGURATIONS)		REASON FOR SELECTION
4	HEADINGS			
5	CONFIGURATION NUMBER	ARR & DEP RUNWAYS	ARR & DEP CAPACITY	4R RWY REMARKS
6	"	"	"	4L "
7	"	"	"	9R "
8	"	"	"	9L "
9	"	"	"	14R "
10	"	"	"	14L "
11	"	"	"	22R "
12	"	"	"	22L "
13	"	"	"	27R "
14	"	"	"	27L "
15	"	"	"	32R "
16	"	"	"	32L "
17	"	"	"	LEGEND FOR RUNWAY REMARKS
18	"	"	"	"
19	"	"	"	"
20	"	"	"	"
21	"	"	"	NEXT PLANNED WX CHANGE TIME
22	MENU OF PROGRAM FUNCTION KEY (PF)			
23	MENU OF PROGRAM FUNCTION KEY (PF)			
24	PROTOCOL MESSAGE LINE			

PANEL NAME: PF-3 ELIGIBLE PLANNING CONFIGURATION PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS			
1	TITLE OF PANEL		PANEL SELECTION TIME (GMT)	
2	TIME SLOT OF PANEL	CONFIGURATION SELECTION (NUMBER)	PANEL QUARTER-HOUR TIME SLOT	
3	SCROLL FUNCTION	(NUMBER OF SCROLL LINES) (FOR ELIGIBLE CONFIGURATIONS)		REASON FOR SELECTION
4	HEADINGS			
5	CONFIGURATION NUMBER	ARR & DEP RUNWAYS	ARR & DEP CAPACITY	4R RWY REMARKS
6	"	"	"	4L "
7	"	"	"	9R "
8	"	"	"	9L "
9	"	"	"	14R "
10	"	"	"	14L "
11	"	"	"	22R "
12	"	"	"	22L "
13	"	"	"	27R "
14	"	"	"	27L "
15	"	"	"	32R "
16	"	"	"	32L "
17	"	"	"	LEGEND FOR RUNWAY REMARKS
18	"	"	"	"
19	"	"	"	"
20	"	"	"	"
21	"	"	"	NEXT PLANNED WX CHANGE TIME
22	MENU OF PROGRAM FUNCTION KEY (PF)			
23	MENU OF PROGRAM FUNCTION KEY (PF)			
24	PROTOCOL MESSAGE LINE			

PANEL NAME: PF-9 INELIGIBLE CURRENT CONFIGURATION PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS		
1	TITLE OF PANEL		PANEL SELECTION TIME (GMT)
2	TIME SLOT OF PANEL		PANEL QUARTER-HOUR TIME SLOT
3	SCROLL FUNCTION (NUMBER OF SCROLL LINES) (FOR INELIGIBLE CONFIGURATIONS)		
4	HEADINGS		
5	CONFIGURATION NUMBER	ARR & DEP RUNWAYS	REASON FOR CONFIGURATION INELIGIBILITY
6	"	"	"
7	"	"	"
8	"	"	"
9	"	"	"
10	"	"	"
11	"	"	"
12	"	"	"
13	"	"	"
14	"	"	"
15	"	"	"
16	"	"	"
17	"	"	"
18	"	"	"
19	"	"	"
20	"	"	"
21	"	"	"
22	MENU OF PROGRAM FUNCTION KEY (PF)		
23			
24	PROTOCOL MESSAGE LINE		

PANEL NAME: PF-9 INELIGIBLE PLANNING CONFIGURATION PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS		
1	TITLE OF PANEL		PANEL SELECTION TIME (GMT)
2	TIME SLOT OF PANEL		PANEL QUARTER-HOUR TIME SLOT
3	SCROLL FUNCTION	(NUMBER OF SCROLL LINES SELECTED FOR INELIGIBLE CONFIGURATIONS)	
4	HEADINGS		
5	CONFIGURATION NUMBER	ARR & DEP RUNWAYS	REASON FOR CONFIGURATION INELIGIBILITY
6	"	"	"
7	"	"	"
8	"	"	"
9	"	"	"
10	"	"	"
11	"	"	"
12	"	"	"
13	"	"	"
14	"	"	"
15	"	"	"
16	"	"	"
17	"	"	"
18	"	"	"
19	"	"	"
20	"	"	"
21	"	"	"
22	MENU OF PROGRAM FUNCTION KEY (PF)		
23			
24	PROTOCOL MESSAGE LINE		

PANEL NAME: PF-4 USER MESSAGE PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS
1	TITLE OF PANEL PANEL SELECTION TIME (GMT)
2	SCROLL FUNCTION (NUMBER OF SCROLL LINES FOR) (RECENT ALERTS AND ADVISORIES) HEADING
3	HEADING
4	RECENT ALERTS AND ADVISORIES
5	"
6	"
7	"
8	"
9	"
10	"
11	"
12	SCROLL FUNCTION (NUMBER OF SCROLL LINES FOR) (CURRENT EQUIPMENT AND RUNWAY MESSAGES)
13	HEADING
14	CURRENT EQUIPMENT AND RUNWAY MESSAGES
15	"
16	"
17	"
18	"
19	"
20	"
21	"
22	MENU OF PROGRAM FUNCTION KEY (PF)
23	MENU OF PROGRAM FUNCTION KEY (PF)
24	PROTOCOL MESSAGE LINE

PANEL NAME: PF-5 DEMAND PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS				
1	TITLE OF PANEL			PANEL SELECTION TIME (GMT)	
2	HEADINGS (KEY FOR TYPE OF AIRCRAFT IN DEMAND TABLE)				
3	HEADINGS				
4	START TIME OF DEMAND	ARR DEMAND TOTAL	ARRIVAL FIX DEMAND	DEP DEMAND TOTAL	DEPARTURE FIX DEMAND
5	QUARTER-HR. INTERVAL	"	"	"	"
6	"	"	"	"	"
7	"	"	"	"	"
8	DASHES -				
9	HOUR TIME SLOT OF DEMAND	"	"	"	"
10	DASHES -				
11	START TIME OF DEMAND	"	"	"	"
12	QUARTER-HR INTERVAL	"	"	"	"
13	"	"	"	"	"
14	"	"	"	"	"
15	DASHES -				
16	HOUR TIME SLOT OF DEMAND	"	"	"	"
17	DASHES -				
18	START TIME OF DEMAND	"	"	"	"
19	HOUR INTERVAL	"	"	"	"
20	"	"	"	"	"
21	"	"	"	"	"
22	MENU OF PROGRAM FUNCTION KEY (PF)				
23	MENU OF PROGRAM FUNCTION KEY (PF)				
24	PROTOCOL MESSAGE LINE				

PANEL NAME: PF-6 WEATHER PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS					
1	TITLE OF PANEL				PANEL SELECTION TIME (GMT)	
2	HEADING ("CURRENT WEATHER") DASHES - - - - - - - - - - - -					
3	HEADINGS					
4	TIME OF ENTRY	SKY CONDITION	CEILING CONDITIONS (3) ENTRIES		VISIBILITY CONDITIONS	ATMOSPHERIC CONDITIONS
5	HEADINGS					
6	BAROMETRIC PRESSURE	TEMPERATURE	DEW POINT	WIND	ALTIMETER SETTING	OTHER
7	LINE SUMMARY OF CURRENT WEATHER					
8	HEADING ("FORECAST WEATHER") DASHES - - - - - - - - - - - -					
9	HEADINGS					
10	TIME OF ENTRY	SKY CONDITION	CEILING CONDITIONS (3 ENTRIES)		VISIBILITY CONDITION	ATMOSPHERIC CONDITIONS
11	HEADINGS					
12	BAROMETRIC PRESSURE	TEMPERATURE	DEW POINT	WIND	ALTIMETER SETTING	OTHER
13	LINE SUMMARY OF FORECAST WEATHER					
14	CAB VISIBILITY ENTRY				CAB CEILING ENTRY	
15	LEGEND OF POSSIBLE CAB VISIBILITIES		HEADING		HEADING	
16	"		RVR READINGS		1) PLANNED WX CHANGE	
17	"		"		2) "	
18	"		"		3) "	
19	"		"		O'HARE DASE	
20	"		"		MIDWAY DASE	
21	"					
22	MENU OF PROGRAM FUNCTION KEY (PF)					
23	MENU OF PROGRAM FUNCTION KEY (PF)					
24	PROTOCOL MESSAGE LINE					

PANEL NAME: PF-6 (REPEATED) AREA WEATHER PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS
1	TITLE OF PANEL PANEL SELECTION TIME (GMT)
2	AREA WEATHER REPORTS
3	"
4	"
5	"
6	"
7	"
8	"
9	"
10	"
11	"
12	"
13	"
14	"
15	"
16	"
17	"
18	"
19	"
20	"
21	"
22	MENU OF PROGRAM FUNCTION KEY (PF)
23	MENU OF PROGRAM FUNCTION KEY (PF)
24	PROTOCOL MESSAGE LINE

PANEL NAME: PF-7 RUNWAY CONDITIONS PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS						
1	TITLE OF PANEL				PANEL SELECTION TIME (GMT)		
2	HEADING						
3	DASHES -						
4	RWY* 4R	BOTH ARR & DEP CLOSED	ARR CLOSED	DEP CLOSED	SURFACE CONDITION	BRAKING CONDITION	LOCAL REMARKS
5	4L	"	"	"	"	"	"
6	4R	"	"	"	"	"	"
7	9L	"	"	"	"	"	"
8	14R	"	"	"	"	"	"
9	14L	"	"	"	"	"	"
10	22R	"	"	"	"	"	"
11	22L	"	"	"	"	"	"
12	27R	"	"	"	"	"	"
13	27L	"	"	"	"	"	"
14	32R	"	"	"	"	"	"
15	32L	"	"	"	"	"	"
16	ALL	"	"	"	"	"	"
17	SCROLL FUNCTION	(NUMBER OF SCROLL LINES FOR CURRENT) (RUNWAY CONDITION MESSAGES)					
18	CURRENT RUNWAY CONDITION MESSAGES						
19	"						
20	"						
21	"						
22	MENU OF PROGRAM FUNCTION KEY (PF)						
23	MENU OF PROGRAM FUNCTION KEY (PF)						
24	PROTOCOL MESSAGE LINE						

PANEL NAME: PF-8 EQUIPMENT PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS				
1	TITLE OF PANEL		PANEL SELECTION TIME (GMT)		
2	HEADINGS				
3	DASHES -				
4	RUNWAY 4R	EQUIPMENT STATUS FOR LOC GS COM OM IM ALS	ARRIVAL RUNWAY MINIMUMS FOR CEILING, VISIBILITY, RVR		
5	4L	F DME RVR HIRL CL TDZ "	"		
6	9R	"	"		
7	9L	"	"		
8	14R	"	"		
9	14L	"	"		
10	22R	"	"		
11	22L	"	"		
12	27R	"	"		
13	27L	"	"		
14	32R	"	"		
15	32L	"	"		
16	SCROLL (NUMBER OF LINES) FUNCTIION (FOR EQP MESSAGES)		CAT II & CAT III STATUS FOR 14R & 14L		
17	CURRENT AND HISTORICAL EQUIPMENT MESSAGES		MIDFIELD DME	UPS1	ENG1
18	"		14R RVR MID	UPS2	ENG2
19	"		14R RVR ROLL	UPS3	ENG3
20	"		14L RVR MID	VOR	
21	"		14L RVR ROLL		
22	MENU OF PROGRAM FUNCTION KEY (PF)				
23	MENU OF PROGRAM FUNCTION KEY (PF)				
24	PROTOCOL MESSAGE LINE				

PANEL NAME: PF-9 TRIGGER VALUE PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS
1	TITLE OF PANEL PANEL SELECTION TIME (GMT)
2	BLANK
3	BLANK
4	DASHES -
5	ARRIVAL CROSSWIND ADVISORY LEVEL DEPARTURE CROSSWIND ADVISORY LEVEL
6	ARRIVAL TAILWIND ADVISORY LEVEL DEPARTURE TAILWIND ADVISORY LEVEL
7	DASHES -
8	HEADINGS
9	EQUIPMENT OUT-OF-SERVICE WARNING TIME FOR MESSAGE | EQUIPMENT RETURN-TO-SERVICE WARNING TIME FOR MESSAGE
10	HEADINGS
11	PLANNED CONFIGURATION WARNING TIME FOR MESSAGE DUE TO NOISE - RUNWAY MAINTENANCE - STAFF - DEMAND - OTHER
12	DASHES -
13	HEADINGS
14	HEADINGS
15	BLANK
16	USER (AT) TRIGGER LEVEL FOR TRIGGERED MESSAGES DUE TO TOTAL DEMAND - ARR DEMAND - DEP DEMAND - WIND - CEILING - RVR
17	NOTIFICATION (***) THAT VALUE HAS MET TRIGGER LEVEL
18	BLANK
19	USER (CAB) TRIGGER LEVEL FOR TRIGGERED MESSAGES DUE TO TOTAL DEMAND - ARR DEMAND - DEP DEMAND - WIND - CEILING - RVR
20	NOTIFICATION (***) THAT VALUE HAS MET TRIGGER LEVEL
21	BLANK
22	MENU OF PROGRAM FUNCTION KEY (PF)
23	MENU OF PROGRAM FUNCTION KEY (PF)
24	PROTOCOL MESSAGE LINE

PANEL NAME: PF-10 PLANNING/FORECAST SELECTION PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS	
1	TITLE OF PANEL	PANEL SELECTION TIME (GMT)
2	PLANNING MODE SELECTION	SELECTION OF PLANNING MODE
3	FORECAST MODE SELECTION	SELECTION OF FORECAST MODE FOR TODAY
4	DASHES - - - - - - -	SELECTION OF FORECAST MODE USING STORED DAY FILE DATA
5	"USE SAVED FORECAST"	
6	"FILE FROM"	
7		
8		
9		
10	- - DASHES - - - - - - - - - -	
11	- - - - - - - - DASHES - - - - - - - - - - - - - - - - -	
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22	INSTRUCTIONS	
23	MENU OF PROGRAM FUNCTION KEY (PF)	
24	INSTRUCTIONS	

PANEL NAME: PF-6 WEATHER PLANNING LOG

LINE NUMBER	DESCRIPTION OF CONTENTS							
1	TITLE OF PANEL				PANEL SELECTION TIME (GMT)			
2	DASHES -							
3	HEADINGS							
4	DASHES -							
5	START TIME OF WEATHER	END TIME	CEILING (FT)	VISIB MILES	WIND VEL/DR	REMARKS 25 CHAR	USER ID	ACCEPT TIME
6	HHMM							HHMM
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21	DASHES -							
22	MENU OF PROGRAM FUNCTION KEY (PF)							
23	MENU OF PROGRAM FUNCTION KEY (PF)							
24	PROTOCOL MESSAGE LINE							

PANEL NAME: PF-7 RUNWAY CLOSURE PLANNING LOG

LINE NUMBER	DESCRIPTION OF CONTENTS									
1	TITLE OF PANEL					PANEL SELECTION TIME (GMT)				
2	DASHES -									
3	HEADINGS									
4	DASHES -									
5	RWY NAME	ARR & DEP OUTAGE	ARR OUT	DEP OUT	CLOSE TIME	OPEN TIME	SURF /BRAK	REMARKS 9 CHAR	USER ID	ACCEPT TIME
6		'P' OR ' '			HHMM	HHMM				HHMM
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21	DASHES -									
22	MENU OF PROGRAM FUNCTION KEY (PF)									
23	MENU OF PROGRAM FUNCTION KEY (PF)									
24	PROTOCOL MESSAGE LINE									

PANEL NAME: PF-8 EQUIPMENT PLANNING LOG

LINE NUMBER	DESCRIPTION OF CONTENTS						
1	NUMBER OF SCROLL LINES TITLE OF PANEL PANEL SELECTION TIME (GMT)						
2	DASHES -						
3	HEADINGS						
4	DASHES -						
5	RUNWAY NAME	EQUIPMENT NAME	OTS TIME	RTS TIME	REMARKS 30 CHAR	USER ID	ACCEPT TIME
6			HHMM	HHMM			HHMM
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21	DASHES -						
22	MENU OF PROGRAM FUNCTION KEY (PF)						
23	MENU OF PROGRAM FUNCTION KEY (PF)						
24	PROTOCOL MESSAGE LINE						

PANEL NAME: PF-10 FORECAST CONTROL PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS				
1	TITLE OF PANEL			PANEL SELECTION TIME (GMT)	
2	FORECAST MODE		FORECAST	PLAN & CONFIGURATION	
3	DAY SELECTED		CO-PARTICIPANTS	SUBMISSIONS	
4					
5					
6					
7					
8					
9					
10	DASHES - - - - -				
11	SCROLL FUNCTION	- - - - DASHES - - - - - - - - - - - - - - - - - -			
12	HEADINGS		START TIME OF SELECTION		
13	HEADINGS				
14	HEADINGS				
15	TIME	ELIGIBILITY STATUS	ARR & DEP RUNWAYS	HOURLY CAPACITY	PEAK DEMAND TO CAPACITY RATIO
16					
17					
18					
19					
20					
21					
22	MENU OF PROGRAM FUNCTION KEY (PF)				
23	MENU OF PROGRAM FUNCTION KEY (PF)				
24	PROTOCOL MESSAGE LINE				

PANEL NAME: PF-2 FORECAST STATUS PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS				
1	TITLE OF PANEL				
2	HEADINGS				
3	DASHES -				
4	RUNWAY 4R	EQUIPMENT STATUS	RUNWAY STATUS	ARRIVAL MINIMUMS	
5	4L				
6	9R				
7	9L				
8	14R				
9	14L				
10	22R				
11	22L				
12	27R				
13	27L				
14	32R				
15	32L				
16	14R CAT II STATUS		14R RVR-MID STATUS	STATUS UPS1	
17	" CAT III STATUS		14R RVR-ROLL STATUS	UPS2	WEATHER HEADING
18	14L CAT II STATUS		14L RVR-MID STATUS	UPS3	"
19	" CAT III STATUS		14L RVR-ROLL STATUS	ENG1	CEILING & [illegible]
20	BLANK		VOR STATUS	ENG2	BLANK
21	BLANK		MIDFIELD DME STATUS	ENG3	BLANK
22	MENU OF PROGRAM FUNCTION KEY (PF)				
23	MENU OF PROGRAM FUNCTION KEY (PF)				
24	PROTOCOL MESSAGE LINE				

PANEL NAME: FORECAST PF-3 CURRENT CONFIGURATION PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS			
1	TITLE OF PANEL		PANEL SELECTION TIME (GMT)	
2	TIME SLOT OF PANEL	CONFIGURATION SELECTION (NUMBER)	PANEL QUARTER-HOUR TIME SLOT	
3	SCROLL FUNCTION	(NUMBER OF SCROLL LINES) (FOR CONFIGURATIONS)		REASON FOR SELECTION
4	HEADINGS			
5	CONFIGURATION NUMBER	ARR & DEP RUNWAYS	ARR & DEP CAPACITY	4R RWY REMARKS
6	"	"	"	4L "
7	"	"	"	9R "
8	"	"	"	9L "
9	"	"	"	14R "
10	"	"	"	14L "
11	"	"	"	22R "
12	"	"	"	22L "
13	"	"	"	27R "
14	"	"	"	27L "
15	"	"	"	32R "
16	"	"	"	32L "
17	"	"	"	LEGEND FOR RWY REMARKS
18	"	"	"	"
19	"	"	"	"
20	"	"	"	"
21	"	"	"	NEXT PLANNED WX CHANGE TIME
22	MENU OF PROGRAM FUNCTION KEY (PF)			
23	MENU OF PROGRAM FUNCTION KEY (PF)			
24	PROTOCOL MESSAGE LINE			

PANEL NAME: FORECAST PF-3 PLANNING CONFIGURATION PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS			
1	TITLE OF PANEL		PANEL SELECTION TIME (GMT)	
2	TIME SLOT OF PANEL	CONFIGURATION SELECTION (NUMBER)	PANEL QUARTER-HOUR TIME SLOT	
3	SCROLL FUNCTION	(NUMBER OF SCROLL LINES) (FOR CONFIGURATIONS)	REASON FOR SELECTION	
4	HEADINGS			
5	CONFIGURATION NUMBER	ARR & DEP RUNWAYS	ARR & DEP CAPACITY	4R RWY REMARKS
6	"	"	"	4L "
7	"	"	"	9R "
8	"	"	"	9L "
9	"	"	"	14R "
10	"	"	"	14L "
11	"	"	"	22R "
12	"	"	"	22L "
13	"	"	"	27R "
14	"	"	"	27L "
15	"	"	"	32R "
16	"	"	"	32L "
17	"	"	"	LEGEND FOR RWY REMARKS
18	"	"	"	"
19	"	"	"	"
20	"	"	"	"
21	"	"	"	NEXT PLANNED WX CHANGE TIME
22	MENU OF PROGRAM FUNCTION KEY (PF)			
23	MENU OF PROGRAM FUNCTION KEY (PF)			
24	PROTOCOL MESSAGE LINE			

PANEL NAME: PF-5 FORECAST DEMAND PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS				
1	TITLE OF PANEL			PANEL SELECTION TIME (GMT)	
2	HEADINGS (KEY FOR TYPE OF AIRCRAFT IN DEMAND TABLE)				
3	HEADINGS				
4	START TIME OF DEMAND	ARR DEMAND TOTAL	ARRIVAL FIX DEMAND	DEP DEMAND TOTAL	DEPARTURE FIX DEMAND
5	QUARTER-HR. INTERVAL	"	"	"	"
6	"	"	"	"	"
7	"	"	"	"	"
8	DASHES -				
9	HOUR TIME SLOT OF DEMAND	"	"	"	"
10	DASHES -				
11	START TIME OF DEMAND	"	"	"	"
12	QUARTER-HR INTERVAL	"	"	"	"
13	"	"	"	"	"
14	"	"	"	"	"
15	DASHES -				
16	HOUR TIME SLOT OF DEMAND	"	"	"	"
17	DASHES -				
18	START TIME OF DEMAND	"	"	"	"
19	HOUR INTERVAL	"	"	"	"
20	"	"	"	"	"
21	"	"	"	"	"
22	MENU OF PROGRAM FUNCTION KEY (PF)				
23	MENU OF PROGRAM FUNCTION KEY (PF)				
24	PROTOCOL MESSAGE LINE				

PANEL NAME: FORECAST PF-6 WEATHER PLANNING LOG

LINE NUMBER	DESCRIPTION OF CONTENTS							
1	TITLE OF PANEL					PANEL SELECTION TIME (GMT)		
2	DASHES -							
3	HEADINGS							
4	DASHES -							
5	START TIME OF WEATHER	END TIME	CEILING (FT)	VISIB MILES	WIND VEL/DR	REMARKS 25 CHAR	USER ID	ACCEPT TIME
6	HHMM							HHMM
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21	DASHES -							
22	MENU OF PROGRAM FUNCTION KEY (PF)							
23	MENU OF PROGRAM FUNCTION KEY (PF)							
24	PROTOCOL MESSAGE LINE							

PANEL NAME: FORECAST PF-7 RUNWAY CLOSURE PLANNING LOG

LINE NUMBER	DESCRIPTION OF CONTENTS									
1	TITLE OF PANEL					PANEL SELECTION TIME (GMT)				
2	DASHES -									
3	HEADINGS									
4	DASHES -									
5	RWY NAME	ARR & DEP OUTAGE	ARR OUT	DEP OUT	CLOSE TIME	OPEN TIME	SURF /BRAK	REMARKS 9 CHAR	USER ID	ACCEPT TIME
6		'P' OR ' '			HHMM	HHMM				HHMM
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21	DASHES -									
22	MENU OF PROGRAM FUNCTION KEY (PF)									
23	MENU OF PROGRAM FUNCTION KEY (PF)									
24	PROTOCOL MESSAGE LINE									

PANEL NAME: FORECAST PF-8 EQUIPMENT PLANNING LOG

LINE NUMBER	DESCRIPTION OF CONTENTS						
1	NUMBER OF SCROLL LINES TITLE OF PANEL PANEL SELECTION TIME (GMT)						
2	DASHES -						
3	HEADINGS						
4	DASHES -						
5	RUNWAY NAME	EQUIPMENT NAME	OTS TIME	RTS TIME	REMARKS 30 CHAR	USER ID	ACCEPT TIME
6			HHMM	HHMM			HHMM
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21	DASHES -						
22	MENU OF PROGRAM FUNCTION KEY (PF)						
23	MENU OF PROGRAM FUNCTION KEY (PF)						
24	PROTOCOL MESSAGE LINE						

PANEL NAME: EQUIPMENT STATUS AND READINGS PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS			
1	TITLE OF PANEL		PANEL UPDATE TIME (GMT)	
2	HEADINGS			
3	DASHES -			
4	RUNWAY 4R	SENSOR STATUS BITS AND READINGS		
5	4L	"		
6	9R	"		
7	9L	"		
8	14R	"		
9	14L	"		
10	22R	"		
11	22L	"		
12	27R	"		
13	27L	"		
14	32R	"		
15	32L	"		
16	MIDWAY HEADING	DASHES -		
17	ILS	WIND	14R RVR-MID READING	14R CAT II
18	LOC	GUST	14R RVR-MID STATUS	14R CAT III
19	NDB	DME-	14L RVR-MID READING	4R GS UPS
20	31L	MIDFIELD	14L RVR-MID STATUS	14R ENG
21	22L	VOR	14R CAT II/CAT III LIST	14L ENG
22	13R	DASE-ORD	14L CAT II/CAT III LIST	ASR-7 ENG
23	4R	DASE-MID	CEILOMETER READING	BLANK
24	BLANK		"	BLANK

PANEL NAME: PF-9 TAXIWAY/NOTAM PANEL

LINE NUMBER	DESCRIPTION OF CONTENTS			
1	SCROLL FUNCTION	(NUMBER OF SCROLL LINES) (FOR TAXIWAYS)		PANEL SELECTION TIME (GMT)
2	HEADINGS			
3	TAXIWAY NAME	SURFACE CONDITION	BRAKING CONDITION	REMARKS (36 CHAR)
4	"	"	"	
5	"	"	"	
6	"	"	"	
7	"	"	"	
8	"	"	"	
9	"	"	"	
10	"	"	"	
11	"	"	"	
12	"	"	"	
13	"	"	"	
14	SCROLL FUNCTION	(NUMBER OF SCROLL LINES) (FOR NOTAMS)		HEADING
15	NOTAM (49 CHAR)			
16	"			
17	"			
18	"			
19	"			
20	"			
21	"			
22	MENU OF PROGRAM FUNCTION KEY (PF)			
23	MENU OF PROGRAM FUNCTION KEY (PF)			
24	PROTOCOL MESSAGE LINE			

APPENDIX B

APPLICATION OF SENSOR DATA TO RCMS LOGIC

RCMS LOGIC APPLICATION

CURRENT DATA

ALSF-2 (14R only)

ALSF/SSALR switch	System selection
Light switch	Switch on or off (OTS)
Flasher switch	Switch on or off (OTS)

ALSF-1 (14L only)

Light switch	Switch on or off (OTS)
Flasher switch	Switch on or off (OTS)

SALSR (27L, 32R, 32L)

SALSR switch	Switch on or off (OTS)
SFL switch	Switch on or off (OTS)

4L SALSR being replaced with
Lion Lighting System

MALSR (4R, 9R, 9L, 22R, 22L, 27R)

MALSR switch	Switch on or off (OTS)
Flasher switch on 4R, 9L, 22R, 27R only	Switch on or off (OTS)

9R & 22L follow brightness
22L will have flasher switch eventually

RCMS LOGIC APPLICATION

CURRENT DATA

LOC (all runways)	
Main	System on (primary channel)
Standby	System on (secondary channel)
Abnormal-off	No failure
steady	Failure
flashing (TI equipment)	Out-of-service for maintenance
Trans 1	Transmitter on or off (Both transmitters required for
Trans 2	CAT III operations)
Alarm	Failure
IM (14R & 14L only)	Switch on or off (OTS)
MM (all runways except 4L)	
14R, 14L, 27L, 32R are monitored	Switch on or off (OTS)
OM (all runways)	
14R & 14L are monitored	Switch on or off (OTS)
LOM/NDB (14R & 14L Monitored)	Switch on or off (OTS)

RCMS LOGIC APPLICATION

CURRENT DATA

GS (all runways except 4L)

Main	System on (primary channel)
Standby	System on (secondary channel)
Abnormal-off	No failure
steady	Failure
flashing (TI equipment)	Out-of-service (OTS) for maintenance
Trans 1	Switch on or off (OTS)
Trans 2	Switch on or off (OTS)

DME (9R, 14R, 14L, 32L, 27L)

Normal	Switch on or off (OTS) DME failure if associated localizer is on
DME Midfield (Wilcox model)	Switch on or off (OTS)
VOR	Switch on or off (OTS)

Manual Panel (14R & 14L)

CAT II and CAT III — after completing checklist, user may enter 'Y' into CAT II or CAT III for 14R or 14L

a. ILS	e. CAT II	i. ALS EG
b. RVR	f. CAT III	j. City EG
c. Other 14 up	g. City lights	
d. IM	h. Equipment EG	

RICU Unit (14R)

CAT II & CAT III	Light on or off indicates availability

Uninterrupted Power Sources

4R LOC, 4R GS (monitored), 9R GS	If off, then system has 15 minutes of operation

RCMS LOGIC APPLICATION

CURRENT DATA

DASE (Chicago O'Hare and Midway)

A1 - A7	
B1 - B7	Numeric values for altimeter setting
A1 - A7	Numeric values for altimeter setting
B1 - B7	Numeric values for altimeter setting

LLWAS (Centerfield Wind)

Wind direction	Numeric value - degrees displayed on PF-1
Wind velocity	Numeric value - knots displayed on PF-1
Gust value	Numeric value - knots

No crosswind advisory messages are generated if the wind is gusting.

Ceilometer (Two field units)

Cloud height conditions & ceiling	18 bits of data for the 2 ceilometers
(Scattered, broken, or overcast)	

RCMS LOGIC APPLICATION

CURRENT DATA

Midway Light Panel	
ILS	Not presently used
LOC	Not presently used
NBD	Not presently used
31L	Not presently used
22L	Not presently used
13R	If light is on, 13R operations affect departures on 22L & 27L
4R	Not presently used
Engine Generator	
Eng 1 (14R Engine)	Required for CAT II and CAT III
Eng 2 (14L Engine)	Required for CAT II and CAT III
Eng 3 (ASR-7 Engine)	Required for CAT II and CAT III
High Intensity Runway Lights (runway edge lights)	
9R, 9L, 14R, 14L, 27R, 27L, 32R, 32L monitored by RVR	Switch on or off (OTS) depending on the brightness level
4R, 4L, 22R, 22L are not monitored	
Touchdown RVR	
9R, 9L, 14R, 14L, 27R, 27L, 32R, 32L	Readings of RVR, HIRL, Daylight, and status bit
4R, 4L, 22R, 22L are not monitored	
Mid RVR	
14R and 14L	Readings of RVR, HIRL, Daylight, and status bit

APPENDIX C

GLOSSARY

ALS	APPROACH LIGHTING SYSTEM
ALSF	APPROACH LIGHTING SYSTEM WITH FLASHERS
CL	CENTERLINE LIGHTING
DASE	DIGITAL ALTIMETER SYSTEM
DME	DISTANCE MEASURING EQUIPMENT
EG	ENGINE GENERATOR
F	FLASHERS
FFM	FAR FIELD MONITOR
GS	GLIDE SLOPE
HIRL	HIGH INTENSITY RUNWAY LIGHTS (RUNWAY EDGE LIGHTS)
IM	INNER MARKER
LLWAS	LOW-LEVEL WIND SHEAR ALERT SYSTEM
LOC	LOCALIZER
LOM	COMPASS LOCATOR AT THE OUTER MARKER
MALSR	MEDIUM INTENSITY APPROACH LIGHTING SYSTEM WITH RAIL (FLASHERS)
MM	MIDDLE MARKER
NDB	NONDIRECTIONAL RADIO BEACON
OM	OUTER MARKER
OTS	OUT-OF-SERVICE
RAIL	RUNWAY ALIGNMENT INDICATOR LIGHTS
RTS	RETURN-TO-SERVICE
RVR	RUNWAY VISUAL RANGE
RWY	RUNWAY
SFL	SEQUENCE FLASHING LIGHTS
SSALR	SIMPLIFIED SHORT APPROACH LIGHTING SYSTEM WITH RAIL (FLASHERS)
TDZ	TOUCHDOWN ZONE LIGHTS
VOR	VERY HIGH FREQUENCY OMNI-RANGE

COMPASS LOCATORS ARE LOM/NDB

APPENDIX D

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